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Milwaukee, Wisconsin

Incorporated, 1906

For the purpose of advancing the study and preservation of Wisconsin Indian Antiquities

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THE WISCONSIN ARCHEOLOGIST

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A SCOTTSBLUFF PROJECTILE POINT FROM MANITOBA

Jack Steinbring

A recent examination of collections from the high ground west of glacial Lake Agassiz has yielded an excellent specimen of the Scottsbuff Type. This artifact was recovered from the surface of an eroded, sandy knoll about twenty miles west of the ancient Lake Agassiz shoreline. The elevation at the point of discovery is approximately 1225 feet. This puts it about 200 feet above the present Assiniboine River which flows in an easterly direction some three miles south of the find. It is also not distant from a small tributary of the Assinipoine River, Epinette Creek, which flows south at an elevation of 1075 feet at a point nearest to the find. The discovery was made by Mr. Orville More, a life-long resident of the area. Mr. More makes his home in a cabin situated directly on this relatively level elevation (known locally as the "Carberry Plain") and he has spent his life roaming the countryside on foot, and learning it well. Only a year ago Mr. More began to collect Indian artifacts. In the late fall of 1965 we had the good fortune to learn of Mr. More's collection, and he was kind enough to allow us to examine it. The collection is comparatively small, and the exact location of most specimens (including the Scottsbluff point) is known. Mr. More's collection contains several unfluted Folsomoid points, numerous retouched flake scrapers, one or two gravers, and snub-nosed end scrapers, all rather suggestive of early cultures in North America. Mr. More, who had no previous experience with collectors and had done no reading on archeological subjects, started right out by collecting **everything** which he thought had been made by man. For this reason, a good many fragmentary items, and technically important objects not ordinarily retained by the collector, are part of Mr. More's collection.

It is noteworthy that only one or two of Mr. More's recovery spots have yielded pottery, and these in extremely limited quantities.

An example of Mr. More's keen perception and diligence provides an almost astonishing addition to our little story of the Scottsbluff point. The specimen itself was a "standout", and we recognized it instantly, even though the entire point region had been broken off. We acknowledged this latter misfortune, and Mr. More advised us that he had tried long

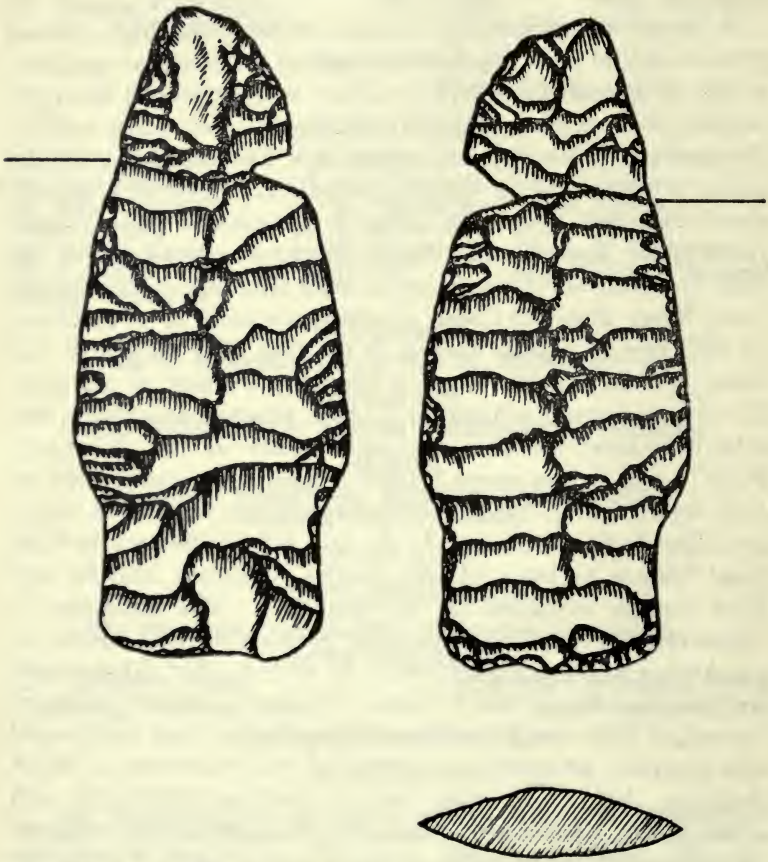


FIGURE 1. Scottsbluff projectile point found near Carberry in Western Manitoba, Canada. The locus of this point is on a high plain several miles west of glacial Lake Agassiz. Drawing is actual size, and lines indicate fracture.

and hard to locate the missing part, but without result.. We went on then to examine a large number of retouched flakes, and artifact fragments, many of which were of a dark brown flint identical to that of the Scottsbluff point. In the course of doing so, Mr. Bruce Morton, our laboratory assistant in Anthropology, found the badly fractured tip of the Scottsbluff point!. It has since been restored.

The projectile point is made from a brown, chalcedonous flint which is sometimes given the mineralogically amorphous term, "Knife River Flint". The workmanship accurately reflects the excellence which is often used to characterize the lithic technology of the Paleo-Indian Period. Both faces exhibit a well defined ripple flaking. This pressure flaking is parallel and horizontal, and all edges have been carefully retouched from both faces. Both sides of the stem and the base have been well ground. One corner of the stem gives the impression of a truncated "ear". This does seem intentional since there is very minute flaking around it, apparently to create the effect. There is a fracture running perpendicular to the long axis at the other corner on the reverse face. It seems likely that a bilateral symmetry has been intended, but failed because of the unpredicted fracture. The actual length of the specimen is 75.0 mm. The maximum width, which occurs at the shoulder, is 31.5 mm, and the maximum thickness, which is just forward of the shoulder, is 7.5 mm. The detachment of the tip is strongly suggestive of impact damage. One face of the tip exhibits a longitudinal flake scar at the very end. This could be best explained by point contact, as would also be the detachment of the point fragment. This would make the recovery of it a doubly remarkable thing. Mason reports nearly identical impact damage for a very similar Scottsbluff Type I projectile point from Wisconsin (Mason 1963:202). On the basis of a free hand continuation of the sides, we would estimate the original length of the projectile point to have been 78.5 mm. There is a bluish-white patination on one face, a condition present on other early point styles in the brown flint hereabouts.

The Scottsbluff projectile point is a Paleo-Indian type which seems to have found its main development and most common

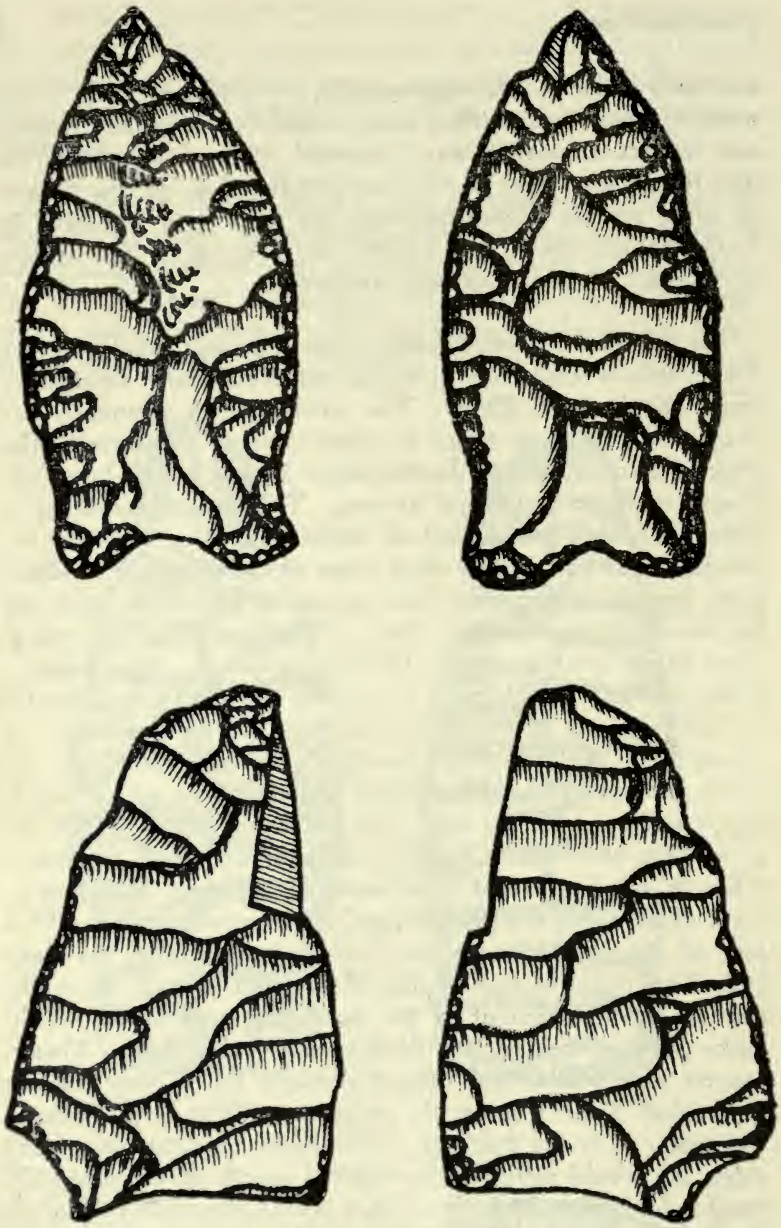


FIGURE 2. Top: Unfluted Folsomoid point from Carberry Plain. Side and tip show damage. Drawing is actual size. Maximum thickness 6.0 mm.

Bottom: Single shouldered, diagonally edged knife resembling Cody type. Tip and side show damage. Tickness 6.6 mm.

Material in both specimens brown, chalcedonous filnt.

use after the fluted point tradition. It seems also to have been generally associated with a later kind of fauna than that usually associated with fluted points. Bison were the main objective of hunters who used the Scottsbluff point, while the earlier fluted points were often associated with the remains of extinct Pleistocene animals like the mammoth. In all probability, the Scottsbluff Type had its antecedents in earlier times since a point greatly resembling the Scottsbluff was found in association with the bones of a mammoth at Santa Isabel Iztapan, Mexico. Although it is broken and the parallel flaking is somewhat broader, its size and general form would be very much like the Manitoba find. A number of radio-carbon dates would tend to set a minimum age of the Iztapan site at 11,000 years ago (Wormington 1957:93). While it is possible that Scottsbuff points may have come into existence earlier than this, there seems to be fair agreement that the most recent occurrence of the type could be set at about 7,000 years ago.

Like several of the Paleo-Indian types, the Scottsbluff point has an extremely broad distribution. In addition to its appearance in the American Southwest, and the Central and Northern Plains, it is also reported for the Iyatayet Site of Alaska's Denbigh Flint Complex. Scottsbluff, and a related form, provisionally called "Alberta" (Wormington 1957:134), are reported for Western Canada. In recent years Mason has called attention to the occurrence of Scottsbluff points in the Eastern United States (Mason 1963:199). While the Brohm Site near Fort William, Ontario, has yielded the related Plainview points, the Scottsbluff point has not been officially reported farther east than Alberta in Canada. Mason suggests that the laterally expanded basal ears of some Wisconsin Scottsbluff specimens may indicate a local variation. He states that this attribute was not then known for the plains (Mason 1963: 203). Even though there is some type of corner development on the Manitoba specimen, there is no doubt that it is of the Scottsbluff Type I classification. Consequently, in the absence of stratigraphy, the possibility of a western origin for "ears" can not be eliminated. In connection with the breadth of Scottsbluff distribution, the association of the type with the late variety of extinct bison, occidentalis, is of interest: Skin-

ner feels that only this variety spread north into Canada as the glaciers receded. (Skinner 1947:156)

More general terms of classification like Yuma and Cody have been used in connection with the Scottsbluff Type.

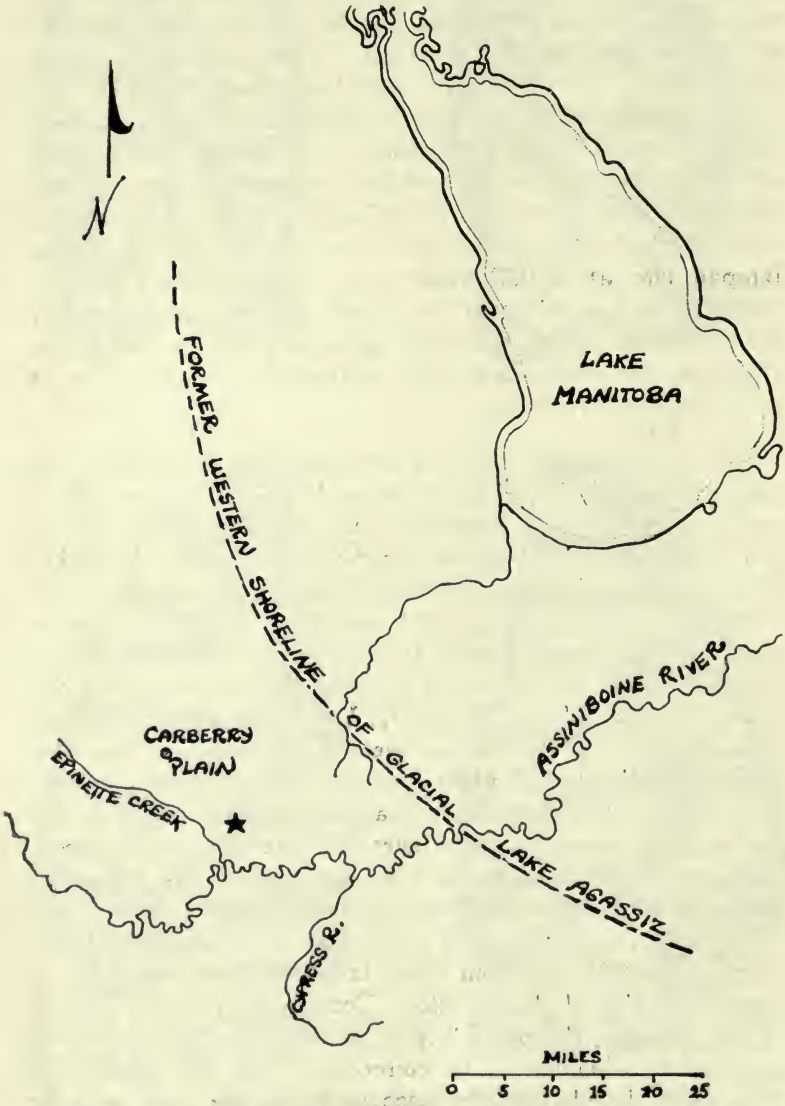


FIGURE 3. Star marks location of Scottsbluff point.

These terms involve a number of projectile point and other tool styles which commonly occur together, both in time and space. The collections of the "Carberry Plain" do contain evidence of such broader cultural possibilities. Mr. More's collection contains a probable example of the Cody Knife, and one unfluted Folsomoid point with a broader blade than those regionally classed as McKean Lanceolate. These specimens are made from the same brown, halcedonous flint as the Scottsbluff point, and were recovered from the same locality. Another collection from a very restricted geographic location several miles to the north contains two examples of the Eden type, again of the same material.

The University of Manitoba is presently engaged in an extensive investigation of the Lake Agassiz beaches with the intention of finding out the relationship between human occupations and post-Pleistocene geographic events. It seems likely that the investigation of Late Paleo-Indian occupations of the high ground some twenty miles to the west will add greatly to the value of these Agassiz Beach studies. Undoubtedly the groups represented by the Scottsbluff and other types on the "Carberry Plain" were typical early plains hunters who traveled the high ground, and probably were the direct forerunners of those who later descended the rivers to form a new kind of life along the shores of a diminishing glacial lake.

BIBLIOGRAPHY

Mason, Ronald J.
1963 "Two Late Paleo-Indian Complexes In Wisconsin," The Wisconsin Archeologist, Vol. 44, No. 4, pp. 199-212.

Skinner, Morris F. and Ove C. Kaisen
1947 The Fossil Bison of Alaska and Preliminary Revision of the Genus, Bulletin of the American Museum of Natural History, Vol. 89, Article 3.

Wormington, H. M.
1959 Ancient Man In North America, Denver Museum of Natural History. Popular Series No. 4.

AN OLD COPPER CULTURE ORNAMENT?

Robert J. Hruska

This unusual copper specimen was recovered by Frank Klimas of Carney, Michigan. It was discovered on the banks of the Menominee River, 18 miles from Menominee, Michigan, where a burial had been exposed by erosion. Accompanying this specimen were a number of socketed tools of the old cop-

per type. The outline of the piece has been destroyed by erosion, but punctate lines in the form of a cross are plainly visible. It is too thin to have been a tool, and in cases of punctate designs on socketed pieces, the punctates run in two parallel rows — never at right angles. There is also an impression of a strand of shell beads and an imprint of quantities of hair, leading one to believe that this was worn on the upper portion of the body — perhaps on the head as a hair ornament.

Ornaments are not commonly associated with the Old Copper Culture, and perhaps this represents one of the later or transitional stages.

A WISCONSIN ANCHOR STONE?

Robert Ritzenthaler

Recently donated to the Milwaukee Public Museum is a cylindically shaped granite stone with a central groove. It is 4½ inches high with an average diameter of about 5 inches. The groove is roughly one inch wide and varies in depth from ⅓ to ¼ inches.

The specimen was found by the donor, Mr. Robert Hill of Milwaukee, a skin diver who retrieved it from a depth of 8 feet in the Wisconsin River in Sauk County. The circumstances of the find suggest its use as a canoe anchor. The relative lightness of it . . . six pounds . . . would necessitate its use for a light craft such as a birchbark canoe.

The other interpretation of the use of such an object would be as a maul. However, the ends show none of the abrasion one would expect if it were used for hammering.

While the use of this object cannot be definitely determined, it is known that Indians did use anchors, and perhaps this is an example of a prehistoric Wisconsin one.

THIN SECTION ANALYSIS OF TEN AZTALAN SHERDS

James Warren Porter

Washington University at St. Louis

Introduction

Woodland and Mississipian wares from Aztalan have been previously described (Barrett, 1933; and Baerreis and Freeman, 1958). The distinction between the two pottery groups has been made through megascopic determinations of temper, surface finish, vessel shape, and decorative elements. Since neither study contained the results of detailed microscopic analysis of temper and paste types, it was decided that a preliminary thin section study could serve two aims.

a. to check paste and temper features for new data to be added to the descriptive data already available, and

b. to develop a preliminary set of thin sections on Aztalan pottery from the Cahokia site area (East St. Louis, Illinois).

Previous Descriptions

Regarding paste and temper, Barrett (1933) presents the following comments:

p. 298

"Nothing has been encountered here at Aztalan which would indicate specific sources of the clays used in pottery making. Whether a single kind of clay or several kinds were employed it is impossible to determine."

"It is not until we come to tempering materials that we can commence differentiation in the pottery at Aztalan, so far as materials are concerned. Then we find three distinctive types of tempering: shell, cell, and grit."

p. 303 (regarding grit temper)
"The tempering material is sometimes finely divided, but more frequently it is quite coarse and angular, often of a black material which appears to have been specially broken or ground for the purpose. Natural sand appears rarely to have been employed."

p. 322 (regarding shell temper)
"There seems good reason to believe that the shell-tempering and cell-tempering are basically the same, as has already been shown."

Baerreis and Freeman (1958) in their study of the Woodland ceramics, did not concern themselves with paste and temper problems; stating:

p. 52
"In dealing with the Aztalan material, details of paste, temper and manufacture were omitted because of the availability of the descriptive material in Dr. Barrett's study."

To the writer's knowledge no thin section studies have been directed toward the Aztalan material. The thin section descriptions presented here can be considered additional basic ceramic data with which prehistorians of the Aztalan site might further investigate historical and/or sociological levels of archaeological interpretation.

Samples

Dr. Ritzenthaler of the Milwaukee Public Museum kindly supplied ten Aztalan sherds; five classed as Woodland and five as Mississippian. No effort was made to subdivide there into categories. Of the five grit tempered Woodland body sherds; three were cordmarked, one was plain, and one roughened. As defined by Barrett, all appeared to be grit tempered. Of the shell tempered Mississippian body sherds; three were polished plain, one was a thick "salt pap" type (?), and one a drab orange plain surface. Broad generalizations on Aztalan ceramics cannot be made from the study of so small a sample. On the other hand, the results of this preliminary study suggest that detailed paste and temper studies of Aztalan pottery with the petrographic microscope might con-

tribute more descriptive data; it in turn being useful in the broader anthropological questions involved in Aztalan prehistory.

Each sherd was thin sectioned as described previously (Porter, 1958, p. 28-29). In making thin sections of prehistoric pottery certain additional problems arise due to the friable nature of the materials. Sherds in which shell particles have been leached (Barrett's "cell tempered") must be impregnated with a medium which strengthens the paste for the grinding procedures. The better method is described by the developers (Buol and Fadness, 1961). The thin sections were studied with a petrographic microscope.

Terminology

The use of thin sections and the petrographic microscope as tools of analysis necessitates the use of specific terms. The terms most frequently found in the descriptions will be defined in more detail so as to aid those readers not familiar with them.

Clay, Silt, and Sand: These are **particle size** terms which are used to arbitrarily separate a continuous scale of grain size measurement.

Clay — less than 0.0039 mm.
Silt — 0.0039 to 0.0625 mm.
Sand — 0.0625 to 2.00 mm.

Subdivisions of the silt and sand categories can be made; the accepted terms being 'very fine', 'fine', 'medium', and 'coarse'. Naturally occurring pastes will vary in the amounts of thees different grain sizes which are present. Using the microscope it is possible to measure the grains (size) and, in addition, determine the mineralogy of the individual particles. When comparing various mud deposits (used for pottery) it is possible to describe them in terms of the amounts of sand and silt present. With sand grains it is also possible to characterize them according to the degree of **rounding;** this being related to the transportation history of the individual sand sized grain.

Paste: The clayey, plastic material, **without temper,** which was used by prehistoric potters to manufacture ceramic items

is here referred to as the paste. Detailed information on the characteristics of the past is required if a study is to suggest possible paste sources for the ceramics at an archaeological site. To point out these sources it is also required that naturally occurring deposits which **had** been available to the prehistoric inhabitants must be carefully sampled and tested experimentally in order that the data from prehistoric ceramics can be compared with the thin sections. The study reported here unfortunately does not have data from the deposits of the Aztalan area and, therefore, when paste sources are suggested they will be in general terms.

Temper: Refers to any aplastic material which the potter saw fit to add to the paste to reduce shrinkage (drying and firing) as well as to reduce the "stickiness" while working The identification of temper categories in thin section can be very precise when using the microscope, yet the reader should be aware that some problems of temper identification do exist. Looking at thin sections, the investigator must make an identification of what temper was added.

When only a single sherd is viewed it is difficult in some cases to be certain which material the potter added. These special cases are usually found in areas where naturally occurring pastes with high sand and silt content allowed the potter to add only a small amount of temper. The sparse scattering of a grit temper in a sandy paste might at first suggest sand tempering until enough sildes are viewed. In other cases it has been found that sparse shell tempering in sandy pastes have led archaeologists to postulate a mixing of tempers on the part of the prehistoric potter. From what is known ethnographically this seems hardly to have been the situation. Very sandy pastes, requiring little temper, allowed the potter to add only a small amount of temper since the amount added was gauged most likely by feel. Thin section studies of temper groups can contribute the maximum in useful data only when a series of sherds is viewed. Physical anthropology cannot tell us how a prehistoric tribe appeared physically through the study of only one skeleton. Just as groups of people must be described in terms of ranges of physical attributes, so thin section studies of prehistoric pottery must also have enough ma-

terial on hand to allow investigators some idea of the range of material within which he must work. Three or four thin sections of one type of pottery often suggests more about the original sources of the paste and temper than does one slide.

Grog Temper: The term "grog temper" refers to a temper category in which prehistoric potters employed crushed fired clay products (mainly crushed sherds) as the temper. Appendix A contains a full explanation of the term and its use in this present study.

THIN SECTION DESCRIPTIONS

C-349: Cordmarked, bodysherd, Woodland type.

Temper: Grog, with large grit fragments originating from the grog.

The grit fragments measure up to 2.1 mm. Most are granitic types with heavily altered feldspar. A few fragments are diabasic textured gabbro as seen throughout the rest of the Woodland sherds.

Paste: This paste has a distinctive appearance due to the presence of a high amount of carbonate in the fine fraction. Many small rounded carbonate fragments up to medium sand size are present. Other well rounded sand grains range up to coarse sand (.5 mm). The silt fraction is high in carbonate and quartz. There is a moderate amount of silt and sand sized particles.

The sand particles (well rounded) are quartz, limestone (4), microline (1), and plagioclase feldspar (1). The clays are crystalline.

Grog: The presence of grog requires descriptive data in terms of prehistoric pottery.

Paste: The paste of the grog fragments appears to be of two types. Most common is a low silt type, with grit fragments still attached and containing high amount of carbonate in the fine fraction. The other consists of fragments of a dark red-brown type with more silt and angular sand. The problem here with only one sherd is whether these dark-brown types are really grog. They will tentatively be treated as such. With the first type and the grit associations there is no question that grog is present.

The grog (common) is like C-353.

The grit particles referred to above are interpreted to have come from the grog. Two distinct types of rocks are present here. The gabbro type with labradorite and pigeonite; and the granitic type with much altered feldspars, zoned feldspars, orthoclase, hornblende with alteration to biotite, and quartz-feldspar intergrowths.

Interpretation: In crushing pottery for temper, the potter selected two different grit tempered sherds. The mixture here suggests at least two different sherds, but no evidence was noted that would suggest that one or both were in themselves also grog tempered.

C-350: Cordmarked, bodysherd, Woodland, with coarser cordmarking than C-349.

Temper: Grit, with all fragments consisting of diabasic textured gabbro.

Paste: The paste is a very silty-sandy type (rounded sand grains). The center of the sherd is dark brown black with the clays having lost crystallinity. It appears as if the center had reached a temperature at which bloating would have begun to take place, suggesting a paste containing a high amount of organic material. In general appearance this paste is identical to C-351 and C-352.

Interpretation: The potter crushed diabasic gabbro from local glacial source. The paste used probably contained abundant organic material accounting for the near-bloated condition. This suggests an alluvial clay, probably obtained from local sources.

C-351: Cordmarked, bodysherd, Woodland.

Temper: Grit, same as C-350. Largest measure 2.7-3.2 mm

Paste: Same as C-350. The sand grains include quart (some undulose and with inclusions), zoned fel spar (rounded), plagioclase feldspars, heavily a tered orthoclase, chert, and microcline. This co- bination of materials would not be out of place in the glacial setting of the Aztalan site.

C-352: Plain, bodysherd, Woodland.

Temper: Grit, same as C-350.

Paste: Silty and very sandy (rounded grains). Sand predominantly quartz with a few plagioclase and microcline.

Although the paste appears somewhat different compared to C-350, this increase in the silt and sand fraction might be expected in an alluvial clay deposit. From this sample no significance can be attributed to this small increase in the silt and sand fraction.

C-353: Roughened surface, bodysherd, Woodland.

Temper: Grit, same as C-350.

Paste: Clays crystalline, moderately silty-sandy paste with some carbonate present in the fine fraction (like C-349).

This is the type of sherd used to temper C-349.

C-354: Plain, polished, Mississippian.

Temper: Shell with some particles consisting of wavy layers of carbonate. These come from the outer layers and hinge areas of the shells. River clams produce these same patterns when experimentally crushed and added to pastes.

Paste: Like C-349, with high carbonate content in the fine fraction. The sand present (well rounded) is quartz, chert, and plagioclase feldspar.

C-355: Plain, polished, thin bodysherd (shoulder area), Mississippian.

Temper: Shell, with a noticeable blocky appearance to the shell. The over-all view is much different from C-355. A different type of clam shall is suggested.

Paste: Very low silt type, with only a few very fine sand grains. Carbonate content in the fine fraction is difficult to distinguish from situation seen in C-349. Appears to be a different paste from the rest of the Mississippian sherds. Sand grains are quartz.

-356: Plain, bodysherd, Mississippian.

emper: Grog, with equal amounts of shell and grit present. The identification of grog is based on the presence of 7 particles. The cut of this thin section may well have missed much of the grog present, making further interpretations too weak for the evidence present.

Pate: Moderately silty — very sandy, with well rounded quartz grains. Carbonate is present in the fine fraction, but it is not as prominent as in C-349. See

explanation in section on additions to Barrett's descriptions.

Grog: Appears to be identical in paste features to the sherd. The grit particles are assumed to have come from the grog and are basic rock fragments. The shell fragments are all very thin and evenly scattered throughout the paste.

Without further analysis of this paste and temper situation it is difficult to interpret the meaning of the components. Tentative conclusion is that the sherd was grog tempered like C-349 and that the shell is a natural inclusion in the marly paste.

C-357: Polished, bodysherd, Mississippian.

Temper: Shell, identical to those seen in C-354.

Paste: Like C-354. Sand grains are quartz, chert, orthoclase, microcline, and hornblende (altering).

Along the outer portion of the sherd there is a trace of a bright red slip. It is present only in tiny cavities and is tentatively interpreted to mean that the slip had been removed through use and archaeological processing.

C-358: Plain, thick bodysherd, (salt-pan type?), Mississippian.

Temper: Shell, identical to those seen in C-354.

Paste: Like C-354. Sand grains include quartz, orthoclase, and microcline.

SUMMARY OF MICROSCOPIC FEATURES

W=Woodland **CM=Cordmarked** **R=roughened**
M=Mississippian **Pn=plain** **Po=polished**

Slide No.	W or M	Temper	Paste	Comments on temper & Grog
C-349	W(CM)	grog	A	Grog was grit tempered—like C-350 throug C-352.
C-350	W(CM)	grit	B	Grit was gabbro (diabasic).
C-351	W(CM)	grit	B	Grit was gabbro (diabasic).
C-352	W(Pn)	grit	B	Grit was gabbro (diabasic)
C-353	W(R)	grit	A	Grit was gabbro (diabasic) Used to temper C-349.
C-354	M(Po)	shell	A	Shell typical river clam.
C-355	M(Po)	shell	C(?)	Paste and shell differ fro C-354 and others of shell.
C-356	M(Pn)	grog	A	Grog present with shell ad grit in equal amounts.
C-357	M(Po)	shell	A	Shell like C-354.
C-358	M(Pn)	shell	A	Shell like C-354.

Discussion of the Summary Chart of Microscopic Features

Four of the five Woodland sherds were tempered with the same basic rock type (gabbro). Three of these four (C-350 through C-352) were also identical in all paste characteristics. These three sherds formed the **base** against which the remaining two could be compared. C-353, although tempered with crushed basic rock, was different in that it was made from a paste identical to C-352 because of the grog tempering and high carbonate paste. The presence of basic rock fragments in this sherd can be attributed directly to its presence in the grog. The grog, as mentioned previously, was identical to C-353. Thus, for the Woodland sherds, a series of related attributes are observed. How many more Woodland sherds from Aztalan are grog tempered remains to be determined. If there is any time depth to the grog tempered varieties it can be expected that a better sample of grog tempered types will show changes in the grog. More thin sections of grog tempered types will probably show the use of shell tempered grog for tempering **if there is any time depth to the site.** Grog variability found in such sherds will be in part related to the length of occupation of the site.

As far as paste and temper can be studied in thin section there is no evidence at the present time that these materials were obtained from any great distance from the site. In a glaciated area such as the local setting for Aztalan, a variety of materials noted here should be available.

Of the five Mississippian sherds, four were shell tempered and the fifth stood out as a mixture of grog, shell (thought to be natural inclusion), and grit. As pointed out previously, when grog is noted, an attempt must be made to differentiate the temper of the grog. C-356, with its mixture, carries features that relate it to the rest of the series of sherds. The shell was different from the other shell types in over-all appearance; being very fine and evenly scattered throughout the paste. The suggestion of a marl deposit being explored for potter's mud (based on the high carbonate content of the pastes) would allow for these shell fragments to be natural inclusions. As with C-349, it would be of interest to know

how many more sherds of the C-356 type are classified as Mississippian solely on the basis of observed shell fragments in the paste. Obviously, a more rewarding comparison would involve the stylistic modes and thin section analysis.

Three of the Mississippian sherds (C-354, C-357, & C-358) appeared to be identical in paste and temper characteristics. As a base for comparison these three appear to represent the basic group as defined by Barrett in his shell tempered types. Although shell tempered, C-355 is different from these sherds both in appearance of the shell and the paste.

Out of ten Aztalan sherds, six fall into two groups as expected and the remaining four differ in some way from the present standards of pottery identification. From this it is possible to conclude that much more data regarding paste and temper in Aztalan pottery remains to be gathered.

Additions to Barrett's Descriptive Data

In regard to Barrett's comments on paste sources (p. 298) it can now be suggested that at least two different sources are present in the small thin section sample studied here. The possible presence of a third source was indicated by C-355. The high carbonate paste represents a marl type deposit. Marl deposits are defined as friable carbonate earths (clay + carbonate) accumulated in recent or present-day fresh water lakes (Pettijohn, 1957, p. 410). Deposits of this type often contain a high amount of shell material; this being used here to explain C-356 with its "mixed shell-grog-grit" temper.

To the distinction of grit and shell temper can now be added the presence of grog as another temper category. The grog tempering was probably noted by Barrett when he discussed the "finely divided" grit type. In his grit tempered category he observes that they were "most frequently quite coarse" (p. 3030); being much like the thin sections C-350 through C-353. In this study no evidence was found that sand temper was present and Barrett's qualification of "rarely" might well represent cases where the sand content was high in the naturally occurring mud.

Barrett's Transitional Types

Barrett's section on transitional types of pottery (pp. 336-342) mentions that various stylistic elements which are re-

lated to the shell tempered types are to be found on grit tempered pastes. Barrett felt that this represented a borrowing on the part of shell tempering potters of a new tempering material. The writer feels that this point of view should be reversed and stated as a case of Mississippian ideas being transferred to a paste and temper base already familiar to the borrowers. It is a simple task (if culturally accepted) to duplicate stylistic features, especially in form. Learning to use new materials (paste and temper) and accomplish firing to the satisfaction of a finished vessel would require more time and experimentation. It should be remembered that different pastes might well remove the possibility of producing certain forms (such as the elaborate rectangular mouthed vessels found at Aztalan). Lithic materials traditionally used are most likely to be the last items to be changed. Thus it would seem as if the grit tempered transitional vessels represented cases where a potter of Woodland background had been incorporated into the Mississippian pottery traditions but with little restriction upon what maerials and tools were used.

Comparison to Cahokia Ceramics

The writer's work with thin sections of Cahokia ceramics allows for some comparisons to be made between the Monks Mound area and Aztalan. There are two levels of comparison that can be made: (1) detailed comparisons between thin sections which might indicate actual trade in pottery vessels, and (2) comparisons between the broader aspects of thin section analysis.

(1) In comparing paste and temper features between the two areas, it is not possible at this time to suggest that any of the Aztalan sherds were made at Cahokia. This does not mean that this analytic approach cannot eventually reveal such a situation. As a matter of fact the use of thin sections and the petrographic microscope will be the major tool in doing so. With so small a sample from Aztalan and no knowledge of local materials nothing was found which could not tentatively be assigned to the local glaciated setting of Aztalan.

2) The over-all combination of grit-shell-grog tempering is common to the Cahokia area as well as Aztalan. The Late

Woodland pottery from the Cahokia region has been characterized by both grit and grog tempering.

In many cases the tempering category into which investigators had placed their material was distinguished by that which they actually saw; i e. large grit fragments (coming from grog). Having a fairly simple set of categories in mind most investigators for the sake of time would judge and categorize their temper studies on only the more obvious criteria. Seeing a large grit fragment protruding from a fresh break in a sherd does NOT necessarly mean that the potter tempered the mud with crushed rock (grit). Because of the microscopic approach we must now suggest that individuals look more closely at the paste and temper of their pottery before sorting into piles which become TIGHT categories in written reports.

A feature of the Woodland ceramics from Aztalan is also grog tempering. The study of thin sections from Cahokia reveals a great variety of grog in some cases. This suugests that a wide variety of pottery materials (many sources and tempers) are available to the potter of Cahokia. The Aztalan material does not show this same degree of variability in paste or temper. Possibly this is only a reflection of our limited sample.

Baerreis (1958, p. 4) asked the question: "Did the mixture of Woodland and Middle Mississippi Culture traditions take place at Aztalan or before the group arrived at this location?" Griffin correctly notes that the Aztalan materials reflect a direct connection with the Cahokia area. If any groups are moving to Aztalan from Cahokia, and we accept the differentiation of Woodland and Mississippian ceramics as a part of this, we can assign the grog tempering to the incoming people who are accustomed to grog or shell tempering, depending upon what paste source they utilize. In a small way this might begin to suggest we make additions to Baerreis' question and reframe it: did the mixture of Woodland and Mississippian ceramic traditions take place through the aid of an already mixed ceramic tradition that was moving north from the Cahokia area? The two alternatives offered in Baerreiss' question might have taken place at the same time.

Conclusions

Thin sections of so small a sample as presented here cannot form the base for broad generalization regarding all of the Aztalan ceramic material. It can be shown that at least two pastes were utilized and that grog tempering is present at Aztalan.

The study has revealed interesting variations in paste and temper which, when properly pursued with additional thin section studies, might aid in bringing new prospective to questions of Aztalan prehistory. The next study should carefully sort pottery into categories based on stylistic modes and check the features of paste and temper against these.

APPENDIX A — Grog Tempering

Grog tempering is more common in the Midwest than had been supposed (Porter, 1960 and 1964). Grog is archaeologically **defined as a temper group which includes any fired-clay product that was crushed and utilized as an aplastic in the prehistoric potter's paste.** The use of the term "grog" to identify crushed fired-clay products as temper came about when searching for a better word than the misnomers "clay temper" and "clay-grit temper."

Archaelologists have borrowed the term **temper** incorrectly from the ceramic industry (Shepard, 1963, p. 25), but, as Shepard has pointed out, the word is so well intrenched that changes would be too difficult. She also noted that Searle had suggested the term grog for the use of fire clay products.

Searle (1921) mentions grog in the ceramicist's terminology.

> "As fireclay is largely used for objects of considerable size, it is generally mixed either with clay burned specially ('grog') or with the broken and damaged goods from the factory, in order to lessen the shrinkage on drying and firing." (p. 4)

In this he defined grog as a clay product specially fired for an aplastic to be added to the clay but indicates that broken factory rejectage serves the same purpose. As one might expect, in a factory situation the addition of the rejectage becomes an economic measure. The use of grog tempering very possibly arose in prehistoric times for the same purposes.

More recently a ceramic definition for grog is given:

"**Grog:** Firebrick, which may already have been used in a furnace lining or elsewhere, crushed to a size suitable for incorporation in a batch, either for remaking into bricks or for use in refractory cement, ramming, or parching material. The word is probably derived from the French **gros grain** (coarse grain) via the English 'grogram (coarse cloth)." (Dodd, 1964, p. 132.)

Thus, a term has been borrowed from the ceramic industry and given an archaeological definition which is in close agreement with its ceramic equivalent.

Dr. Shepard's hesitation at the writer's use of the term grog (personal communication — 1962) prompted re-evaluation of the choice. Thought was given to other possibilities, but it was decided to remain with grog because of the following:

a. The use of the word "sherd temper" indicates that the investigator is in possession of data indicating that sherds had been crushed for temper. Because most studies of paste and temper are carried out megascopically, there are seldom situations where the temper can be easily identified as crushed sherd. Therefore, the word "grog" simply indicates that the investigator has seen crushed fire-clay but makes no evaluation of the remaining details.

b. In finding grog temper in prehistoric pottery (with the obvious improvement in viewing with the microscope), it was difficult to communicate the complexity of the descriptive data in a sherd tempered sherd. Repeated use of the same word (sherd) with two meanings in one sentence caused confusion. This was the main reason for not following Dr. Shepard's advice.

The identification of sherd tempering will normally require microscopic confirmation. Thus, the use of **grog** (as observed megascopically) can serve for this suspected temper group and (when viewed microscopically) can serve equally well in complex descriptive situations.

The scope of this paper does not permit broad discussions of grog tempering and its archaeological value in ceramic studies. It will suffice to briefly mention a few interesting aspects of grog tempering along with providing some idea of its interpretational complexity. Archaeological reports on sites in the Lower Mississippi River Valley contain a number of

pottery type-descriptions indicating "clay tempering" (believed to be crushed sherd – grog). Pottery seriation utilizes the frequency of occurrence of the various pottery types to establish a chronological placement for a given site. Grog tempering usually makes up 20 - 30% by volume of a sherd, especially those made with the non-sandy, high silty alluvial deposits. A question which interests the writer is whether or not the almost complete use of crushed sherds to temper pottery affects the sherd frequencies with which the archaeologist deals.

When the prehistoric potter crushed rock for temper there appears to be little problem of identification in thin section. Other temper categories such as bone, sand, and shell have likewise been reasonably simple to distinguish and describe. With grog tempering a more difficult situation developes. In order to allow the reader to understand the possible complexity of thin section interpretation that results when grog was used, it will be useful to provide an example in terms of a potter's actions. Visualize, if you will, the potter taking broken pottery and crushing it for use as temper. These sherds may have been yesterday's kiln failures or sherds from an earlier occupation. The thin section petrographer now deals with two sherds; the sherd being thin sectioned and the grog. He must concern himself with the problems of reconstructing the grog in terms of paste and temper.

From experimentation it is known that heavily grit tempered sherds will produce a great deal of grit (finer due to the grinding) for reuse. In addition parts of the paste of the crushed sherd still cling to the particles of grit. Often in thin section the grog fragments can be seen to contain parts of the grit fragments. With a little practice the petrographer can reconstruct reasonably well in his mind what the temper of the grog was and explain the various distinct features seen in the grog fragments. The case of C-349 in the accompanying paper is such a situation.

To add to the problem it is now necessary to suggest that the potter used more than one pottery variety. This is seen in the mixed grog varieties and the problem of identification and interpretation begins to compound itself. Now to add another

perplexing situation — thin section evidence from Cahokia indicates that some potters used grog which had in itself also been grog tempered. This requires discussing a "grog-in-grog" situation. From this brief outline of the variables involved in grog tempering interpretation, it is hoped that the reader will be tolerant of tentative interpretations based on only one instance in a series of slides of grog tempering.

An example of the complexity which grog tempering can present in thin section is shown in one thin section of a "stumpware" vessel from Cahokia. The paste is apparently foreign to the St. Louis area. The grog consists of shell, sand, and possibly grit tempered pottery. In addition, it is possible to definitely identify a red slip on the shell tempered pottery used as grog. Although this brief description comes from one thin section, other stumpware fragments from Cahokia are much the same.

At present the time and spatial distribution of grog tempering is not known for the Midwest. The Lower Mississippi River Valley seems to have a high concentration. Thin sections indicate that grog is present in the Midwest as early as Black Sand pottery along the Lower Illinois River Valley but lacking in the northern areas even in the historic period.

BIBLIOGRAPHY

Baerreis, D. A. and Freeman, J. E.
1958 "Late Woodland Pottery in Wisconsin as Seen from Aztalan." The Wisconsin Archeologist, Volume 39, pp. 35-61.

Barrett, S. A.
1933 Ancient Aztalan, Bulletin of the Public Museum of the City of Milwaukee, Volume 13, pp. 1-602.

Buol, S. W. and Fadness, D. M.
1961 "New Method of Impregnating Fragile Material for Thin sectioning." Soil Science Society of America Proceedings, Volume 25, No. 3, pp. 253.

Dodd, A. E.
1964 **Dictionary of Ceramics, London.**

Griffin, J. B.
1960 "A Hypothesis for the Prehistory of the Winnebago." pp. 809-865 in **Culture in History**; Essays in honor of Paul Radin, ed. Diamond.

Porter, J. W.
1958 "Petrographic Analysis of Eight Aztalan Celts." The Wisconsin Archeologist, Volume 39, pp. 26-35.

1960 "Temper in Bluff Pottery from the Cahokia Area." Research Report No. 1, Lithic Laboratory, Southern Illinois University Museum.

1964 "Comment on Weaver's 'Technological Analysis of Lower Mississippi Ceramic Materials'" American Antiquity, Volume 29, No. 4, pp. 520-521.

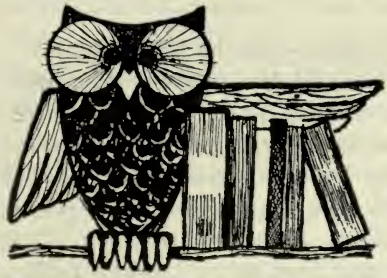
Pettijohn, F. J.
1957 **Sedimentary Rocks**, New York.

Searle, A. B.
1921 **"The Clayworker's Handbook,"** London.

BOOKS RECEIVED

MYTHS OF CREATION – By Philip Freund, Washington Square Press. 1965. Price $4.95.

TALES TOLD BY FOSSILS – By Carroll Lane Fenton, Doubleday & Co., Inc., New York. 1966. Price $4.95.



THE BOOKSHELF

By

David A. Baerreis

and

Guest Reviewers

The Steuben Village and Mounds, A Multicomponent Late Hopewell Site in Illinois, by Dan F. Morse. Anthropological Papers, Museum of Anthropology, University of Michigan, No. 21, 1963. 134 pp., 19 tables, 63 plates, 8 appendixes. $2.50.

Dan F. Morse is known to readers of **The Wisconsin Archaelogist** for his recent publication in that series on Red Ochre burials in Illinois. His report on the Steuben village and mounds will also be useful to workers in Wisconsin since it contains descriptions of excavated artifacts and of all surface collections from this site, which has frequently been mentioned in the literature on Illinois Hopewell, but has not been previously described.

The Steuben village site is interpreted to be a Late Hopewell manifestation since Weaver ware predominates in occurrence over Havana ware. The village material described was recovered from three, 5' x 10' excavation units varying in depth from 2.5' to 4.0', and from five surface collections, some begun in the 1930's. The vertical distribution of pottery is analysed according to wares and types, hence it is necessary that the reader be familiar with Griffin's descriptions and chronological ordering of Hopewell, Havana, and Weaver wares and their constituent types in order to comprehend the analysis (1952). A detailed discussion of differences between Havana and Weaver wares as they are represented at this site is presented, and within the discussion of the Morse and Umma surface collections has been included an analysis of the decorative variation on Steuben Punctate pottery rims. Unfortunately, there are not many illustrations of pottery types, nor are rim profiles presented for the types. This in-

formation must be gleaned from the verbal descriptions.

Projectile points are discussed and the types briefly described. Some types will offer useful comparisons to points recovered from Wisconsin sites of a similar period, but the overall usefulness of this publication for comparison is somewhat limited by organization. While the type names for points recovered from excavations are mentioned on pp. 30 - 32, it is not until pp. 53 - 59, under the heading of surface collections, that descriptions of the types are presented.

Other stone and the bone artifacts are well described with their functions often inferred, and where possible, they are compared to similar artifacts from other Illinois Hopewell sites. This aspect of the report does offer good comparative data.

One appendix includes Paul Parmalee's identification of faunal remains from the excavations. This list, although not interpreted in terms of ecology, does enhance this report in its utility for comparative purposes.

Nine burial mounds are located at this site, one of which (Mound 1) had not been previously disturbed, and whose excavation and contents are described. A minimum of 58 individuals were recovered from sub-floor burial pits and individual burials in the mound fill. The mound was composed of three separate conical mounds which were all covered in the course of final building stages to form one oval mound.

Age, sex, stature, and pathologies of the skeletal population are described and comparisons made to similar data from burial sites in Illinois of a similar time period.

Morse has isolated two components at this Late Hopewell site: Excavation Unit III, where the frequency of Havana ware is predominant over that of Weaver ware, is the older, while Unit 1 is considered the younger of the two since Weaver ware predominates over Havana ware. Radiocarbon dates from charcoal obtained through excavation supports this time difference. Morse feels that classification of the components as "earlier" and "later" within Late Hopewell "tells very little about these two components and their relationship within Hopewell in general" (p. 111). He then turns to the Midwest Taxonomic System and places each

component into a focus. Since the components of the Steuben site do not appear to be similar to other sites described in published reports, each of the two foci proposed by Morse contains only one component. Using the taxonomic approach here seems to limit interpretation of the relationship of this site to the larger Hopewell complex. It seems to this reviewer that, given the data presented, calling this site Late Hopewell is more appropriate and meaningful than is the creation of foci each of which is uni-component. Archeological interest is no longer as strongly oriented toward quasi-Linnean classification as it is toward a demonstration of temporal-cultural dynamics.

Although this report is weak in interpretations, and Morse readily admits that data are lacking for strong interpretaion, the presentation of data from the Steuben site does amplify our concept of Late Hopewe llmanifestations in Illinois.

Joan E. Freeman,
State Historical Society of Wisconsin

REFERENCES CITED

Griffin, James B.
1952 Some Early and Middle Woodland Pottery Types in Illinois. In Hopewellian Communities in Illinois, Thorne Deuel, editor. Scientific Papers, Illinois State Museum, Vol. 5, No. 3, 93-129.

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PRICE SITE III, RI 4, A BURIAL GROUND IN RICHLAND COUNTY, WISCONSIN

Joan E. Freeman

Site Description

Price Site III is one of three sites, located on the property of William G. Price, which were excavated during the summers of 1960 and 1961 under the aegis of the Wisconsin Highway Salvage program.[1] All of the sites were located on the NW ¼, NW ¼, Sec. 7, T8N, R2W, Richland County, and within the relocation right-of-way of State Highway 60.

At the time of excavation Price Sites I and II (village sites) and Price III (a burial ground) were located south of old highway 60 on the first terrace of the Wisconsin River. North of the site lies a valley through which flows a tributary of Knapp Creek. Other water supplies near the sites were two springs, one located 40' north of Price site I and the other east of Price site III. This latter spring had been plowed under during farming activities.

Price III is the most northeasterly of the three sites, lying about 450' from Price II and separated from it by the creek tributary. A concentration of flint chips and a few pieces of grit tempered pottery were found on a low, irregular knoll situated in a corn field and it was here that the excavations were undertaken.

Excavation Procedure

A grid system of 5' squares was established at the site with the major axes oriented NE-SW and NW-SE in conforma-

[1] The crew, hired by the State Historical Society of Wisconsin under its Cooperative Agreement with the Wisconsin Highway Commission, consisted of Joan Freeman and Donald L. Brockington, directors, Messrs. William Hurley, Richard Derrickson, Donald Proulx, James Promenschenkel, Miss Mary Fullmer, and Mrs. Lolita Brockington.

tion with boundaries of the highway right-of-way. Each square was designated by the letter number coordinates of the stake marking its SW corner.

The first squares were excavated on the summit of the knoll since it was here that the greatest number of flakes occurred on the ground surface. In each of four randomly selected squares, the plow zone, 0.9' in depth, was removed by shovel, and in each a pit containing a burial was located. Subsequently, a tractor with front end loader was employed

Figure 1. Price Site III, Ri4

to remove the plow zone to facilitate the location of as many features as possible. An area, 40' x 40', corresponding to the crest of the knoll, was cleared and twenty-six features were located. (Fig. 1)

The cleared area was gridded and all features were given consecutive numbers and included on a plan map. Several five foot squares were excavated outside the cleared area to see whether more features could be found. Only one historic feature of rectangular shape containing lime and nails was discovered.

A trench 3' wide was excavated from beyond the limits of the knoll southward to its center. The soil profile was consistent throughout the length of the trench: plow zone of clay-loam from the surface to 0.9', red brown clay-loam 0.9'; a red, sandy, clay 1.9' to 2.7'; course sand and gravel from 2.7' to 4.5'.

The pits dug into the knoll varied in depth and their fill conformed, in general, to the natural soil strata of the knoll. That is, the soil surrounding burials in those pits extending into the shallower pits was clay-loam, only slightly darker but otherwise identical to the surrounding sterile soil.

Each feature was excavated with trowels. In many instances sandstone or limestone slabs were discovered resting immediately upon a burial. Depths of these slabs from the occupational surface were noted. The underlying skeletons were recovered, photographed, and an inventory of the bones made as they were removed.

Each group of bones, whether a cremation, bundle reburial, or primary burial, was given a burial number. Often, as in feature 25, more than one individual comprised a burial. This fact was noted on the skeletal inventory sheet, but individuals were not usually designated as such until the remains had undergone laboratory study.

Features

Of the twenty-six features located, three (F12, F20, and F22) did not exceed 0.1' in depth and contained sterile fill. It is possible that these represented the bottoms of pits whose upper portions had been plowed off.

Feature 15 was a large, irregular, oval pit which contained 40 unworked flakes and charcoal. The fill of the pit was

black and its sides and bottom were of dense clay whose red color suggested fire oxidization. No human remains were found, so it is assumed that this was not a crematory pit. Charcoal taken from this feature yielded C^{14} date M1438.

Twenty-one of the features, all basin-shaped in cross section, were round, oval, or irregularly oval in plan and contained one to seven burials usually confined to one level. However, the burials of Features 8, 10, and 11 occurred in two levels. Feature 25 contained 88 individuals comprising 37 burials occurring in six levels. A total of 130 individuals were recovered from the site.

Feature 25 was a large, irregular pit which intersected Features 11 and 13, but it was impossible to ascertain priority of construction among these features.

When Feature 25 was excavated, a layer of intermittent sandstone and limestone slabs was first exposed. When these were removed, burials were encountered. Under many of

TABLE 1. FEATURE DIMENSIONS

Feature No.	Length	Width	Depth	Plan
1	3.4'	3.0'	1.8'	oval
2	3.6'	2.3'	0.8'	oval
3	2.9'	2.6'	0.85'	irregular
4	2.0'	1.9'	1.2'	round
5	2.2'	2.1'	2.0'	round
6	3.5'	2.0'	1.1'	oval
7	2.4'	2.2'	1.2'	round
8	2.6'	1.6'	1.0'	oval
9	4.5'	3.1'	0.85'	oval
10	3.8'	3.0'	3.7'	oval
11	5.2'	2.5'	1.0'	oval
12	2.0'	1.5'	0.1'	oval
13	6.7'	5.1'	0.8'	irregular
14	3.8'	2.0'	1.15'	oval
15	10.4	3.2'	.9' to 1.2'	irregular
16	4.5'	2.6'	0.9'	oval
17	4.6'	3.6'	2.0'	irregular
18	2.7'	1.9'	1.4'	oval
19	2.0'	2.0'	1.4'	round
20	1.9'	1.8'	0.1'	round
21	1.6'	1.4'	1.0'	round
22	2.5'	2.0'	0.1'	oval
23	3.2'	1.7'	1.0'	oval
24	4.0'	2.4'	1.9'	oval
25	13.7'	8.0'	3.5'	irregular
26	2.1'	2.1'	0.9'	round

All features are basin-shaped in X-section.

these burials there were more sandstone slabs which covered burials in another level, and under these lay 4 additional levels of burials. Assignment of each burial to one of six levels within Feature 25 was made according to its depth from the pit surface and on the basis of the relative, vertical stratigraphy of the burials.

Burials

Both cremated and unburned bone were found in the burial pits. The unburned bone reflects two types of treatment of the dead: 1) primary burials, 2) bundle reburials. The bundle reburials indicate that the bodies were allowed to reach a state of advanced decomposition and the bones were disarticulated prior to final interment in pits. Occasionally incomplete decomposition of the corpse is indicated by the occurrence of

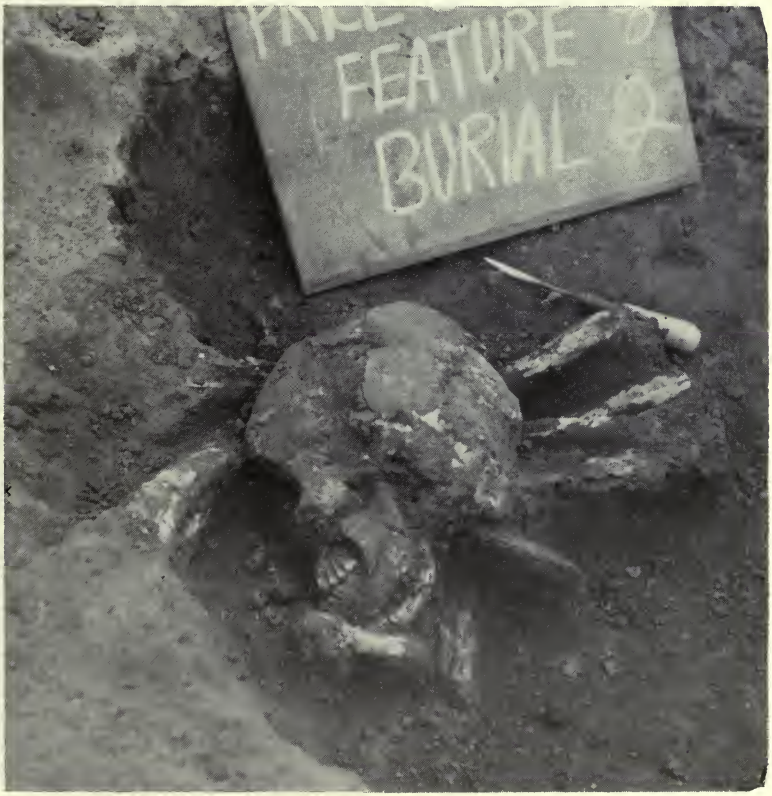

Figure 2. Cremation, Burial 2, Feature 8

long bones in articulation while other elements of the skeleton are disarticulated and out of order.

Primary burials were all flexed and buried on the side, back, or in what is termed the kneeling position. Positions of the kneeling burials indicate that the body was placed in the pit with the upper legs extended and lower legs either flexed back with the heels touching the hips, or, in one burial, flexed to the right side. Arms were flexed and rested in the lap. usually the vertebral column had slumped forward and the skulls rested in the pelvic region. In one burial, however, the skull had toppled backward and the vertebral column had slumped over it.

Cremated remains reflect differences in the intensity of crematory fires or length of time the body was burned. Three

Figure 3. Cremation, Feature 3

categories of cremated bone have emerged and are convenient for the description of these burials:

1. Calcined. Bone fragments range in color from white to light blue-grey and are checked, fractured, and warped.
2. Burned or incompletely incinerated. Bones range in color from black to dark blue-grey.
3. Fire-smudged. Bones show little effect from heat aside from fire darkening or smudging.

A variety of methods for treatment of the dead can be deduced from these cremations. A careless approach to cremation and disposal of cremated remains seems apparent. In no instance of cremation are fragments of the complete skeleton present. This fact suggests that remains were haphazardly removed from the crematory fire, then buried in the knoll. While some skeletons are represented only by calcined fragments, others are burned with some elements in articulation and some flexed. In other burials one side of the postcranial skeleton is well calcined while the bones of the other side are incompletely incinerated.

Mortuary Practices

Two mortuary practices are conspicuous: a thin sprinkling of red ochre over some burials and the use of rock slabs to cover others. Red ochre was found with ten individuals in four burials. The ochre was not abundant, but occurred in small amounts on the bones. In one burial, 36 of Feature 25, red ochre lined the bottom of the pit in which the burials lay.

Red ochre was found on two cremations, six bundle reburials, and two primary flexed burials, with adult males and females, and with children. Hence red ochre does not appear to be linked to a particular burial type nor does its use seem to be correlated with age or sex. However, red ochre is found only in the lower levels of Feature 25 and the lowest burial in Feature 10.

Rocks mantling burials were primarily of sandstone but limestone and granite were also present. Stones ranged from 4" to 15" in diameter and one granite slab weighed 30 pounds. Some stones lay immediately above the remains so that when the slabs were removed, the burial was exposed. Others lay 0.6' to 1.3 above the burials which they covered. When the

Figure 4. Layer of limestone and sandstone slabs, Feature 25

stones rested directly on the remains, the bones were found to be considerably broken. In Feature 25, the rocks formed a stratum just below the pit surface. (Fig. 4) Upon their removal, they were found to cover individual burials. Where a pit contained more than one burial level, bones in the upper level often lay on slabs covering burials in the level below. Such stone mantles occurred in 15 of the 22 pits containing burials, but they were confined to the upper three levels of Feature 25.

Like red ochre, rocks were found covering all burial types and over adult males and females, adolescents, children, and infants. The slabs lay over 27 cremations, 34 bundle reburials, and 4 primary interments. The difference in frequency of rocks present with various burial types is a reflection of the

relative incidence of burial types at this site. The occurrence of rock coverings and red ochre are mutually exclusive except in once instance, Burial 3 of Feature 10. Here red ochre was present in a primary burial although the lower legs were covered with stones.

A comparative discussion and interpretation of the mortuary practices described above, as well as their archeological relationships at Price Site III, will be presented later.

Artifacts

Grave goods are rare at the site and only ten artifacts were found associated with burials. These consist of four chert projectile points, two points made of antler, a copper fishhook, a perforated bear canine, and two worked pieces of human bone.

Projectile Points. Two side-notched specimens were found with burials. Measurements of each are given in Table 2.

The side-notched point found with Burial 6, Feature 13, has a broad blade whose edges are somewhat asymmetrical in outline. The blank form appears to have been ovate-acuminate, tending to lanceolate. Deep "u" shaped notches produce squared tangs whose lateral edges converge toward a decidedly concave base. (Fig. 5a)

The point located with Burial 5, Feature 25, has straight blade edges which are beveled alternately. Like the other side-notched points, the notches on this speciment are "u" shaped and the squared tangs have lateral edges which converge toward the concave base. (Fig. 5b)

TABLE 2. SIDE-NOTCHED PROJECTILE POINT MEASUREMENTS (in mm.)

	L.	W.	Stem L.	Stem W.	Base W	Thickness.
F13 B6	81	40	16	29	30	10
F25 B5	65	25	15	18	22	10

A Price Stemmed point was found in Feature 17. It is 55mm. long, 17mm. wide, with a stem width of 16mm. and stem length of 18 mm. Base width is 20mm., and the specimen is 9mm. thick. The blade edges have been reworked. (Fig. 5c)

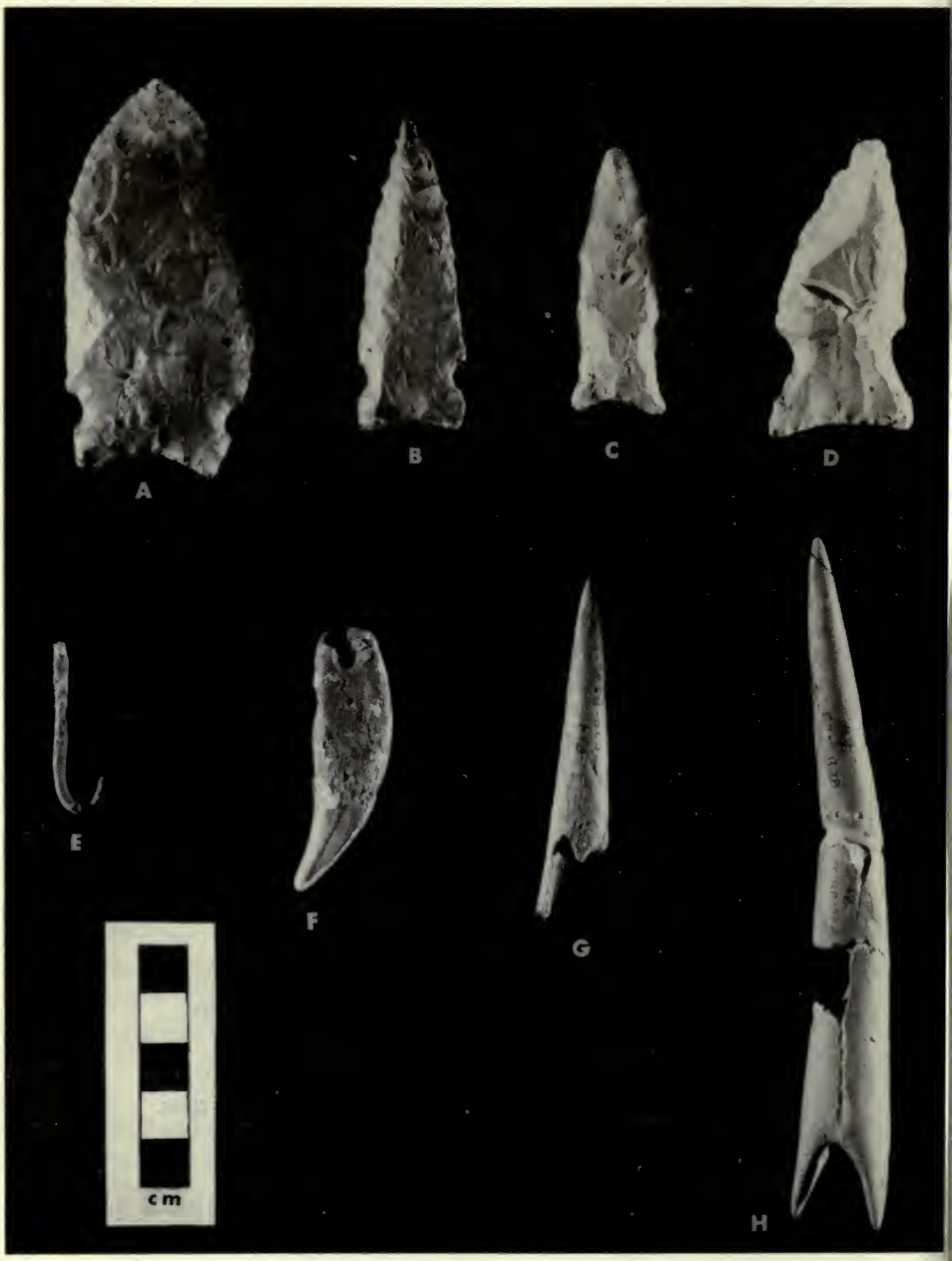

Figure 5. A - B, side-notched projectile points; C, Price Stemmed point; D, unclassified point; B, copper fishhook; F, perforated bear canine; G - H, points made of antler.

Fifty-three Price Stemmed points have been found at four village sites in the lower Wisconsin River valley in an Early to Middle Woodland context. The blade edges of these points are convex. In many of the specimens shoulders are weak but discernible. In others, blade and stem edges merge into each other in a continuous sigmoid curve which extends from the "tang ears" upward to the tip. In several cases, where

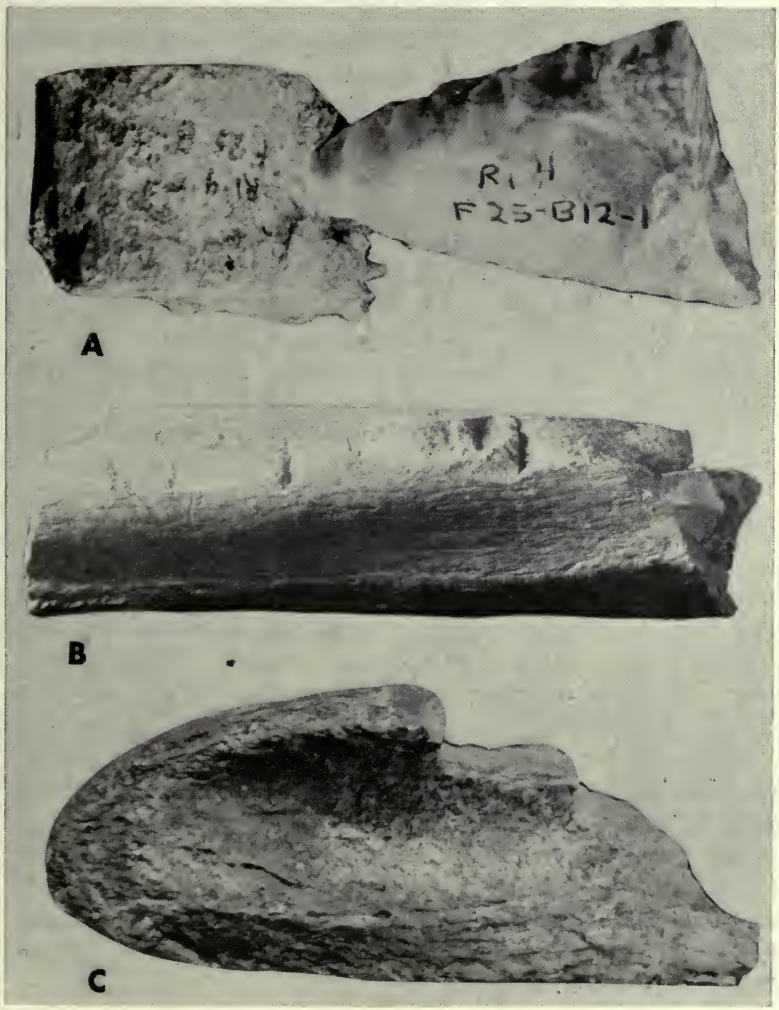

Figure 6. A, projectile point tip in vertebra of Burial 12a, Feature 25; B - C, worked pieces of human bone.

no stem construction is present, the blade edges tend to become straight and parallel as they approach the base.

When a stem constriction is present, the slightly expanding stem, which usually occupies one-third of the length of the point, is produced by the removal of flakes to form long, shallow concavities on each side of the body. As the edges of the stem approach the base, they diverge. This flaring of the stem edges operates in conjunction with the basal concavity to produce prominent, lateral projections on the base which can be termed "tang ears." These projections are usually directed downward and outward, and are most often rounded. (A more complete description of this type will be presented in a report on village sites: Brandon and Freeman mss. in preparation).

A broken, reworked, point was found with one concentration of calcined bone within Feature 24. Its stem expands rapidly to the slightly concave, lightly-ground base. Stem length is 21mm., stem width 20mm., and base width 30mm. The blade of the point was broken and subsequently reworked, (Fig. 5d)

Copper. A copper fishhook, 36 mm. long with a maximum shank thickness of 4mm., was found with burial 31d in Feature 25. The shank of the fishhook is quadrilateral while the hook is round in cross section. (Fig. 5e)

Bone. Two antler projectile points were found with Burial 28B in Feature 25. The one nearly complete point has been shaped into a long cone. The interior of the antler has been hollowed and two opposing, pointed projections form the base. The point is 142mm. long and has a conical bore of approximately 10mm. diameter at the base, which is about 57mm. long. The tip of a similar implement was also found with this burial. (Fig. 5g-h)

An upper left, black bear canine, perforated through the root was associated with burial 31f in Feature 25. The perforation is bi-conical. (Fig. 5f).

The largest adult femur associated with Burial 9, Feature 13, is a burned section of the midshaft (Fig. 6B) Both ends of this section have been broken and show no signs of working, but chopping marks are visible on the exterior of the bone. It is 95mm. long.

The other portion of adult femur from the same burial is also a burned section of midshaft. One end has been diagonally cut to form a chisel-like edge which is highly polished. (Only this chisel edge is shown in Fig. 6c. The entire section of bone is 216mm. long). The bone has the appearance and work marks of a flesher.

Ceramics. No pottery was found in asssociation with the burials so it would appear that the few grit-tempered, cord-roughened body sherds found on the surface of the site cannot be correlated with the burial ground. Either burials belong to a nonceramic horizon or mortuary practices precluded burial of pottery with the dead.

Feature 25 contained 88 individuals buried in six discernible levels. The fact that burials are in superimposition indicates a time difference of some order among burials of the various levels. Examination by level of the relative frequencies of burial types and mortuary practices indicates the waxing and waning popularity of these customs through time at the site under consideration. Fig. 7)

Burial types discussed in this paper are cremation, bundle reburial, and primary flexed burial. It is shown in Table 3 that all types are present in virtually all levels (cremations are absent in levels 4 and 6). It is apparent, however, that the number of cremations increases abruptly in level 1 accompanied by a corresponding decrease in bundle reburials. Primary burials decrease in frequency above level 3. Equally significant is the fact that all primary flexed burials in the upper two levels rest on the side, while in levels 6 through 3, four of five flexed burials are kneeling while the fifth rests on its back.

TABLE 3. BURIAL TYPES, FEATURE 25

Level	Cremated		Flexed		Bundle Reburial		Total	
	No.	%	No.	%	No.	%	No.	%
1	12	41.4	2	6.9	15	51.7	29	100.0
2	1	3.8	1	3.8	24	91.3	26	99.9
3	1	11.1	1	11.1	7	77.8	9	100.0
4			1	12.5	7	87.5	8	100.0
5	1	10.0	1	10.0	8	80.0	10	100.0
6			2	33.3	4	66.7	6	100.0
Total	15		8		63		88	

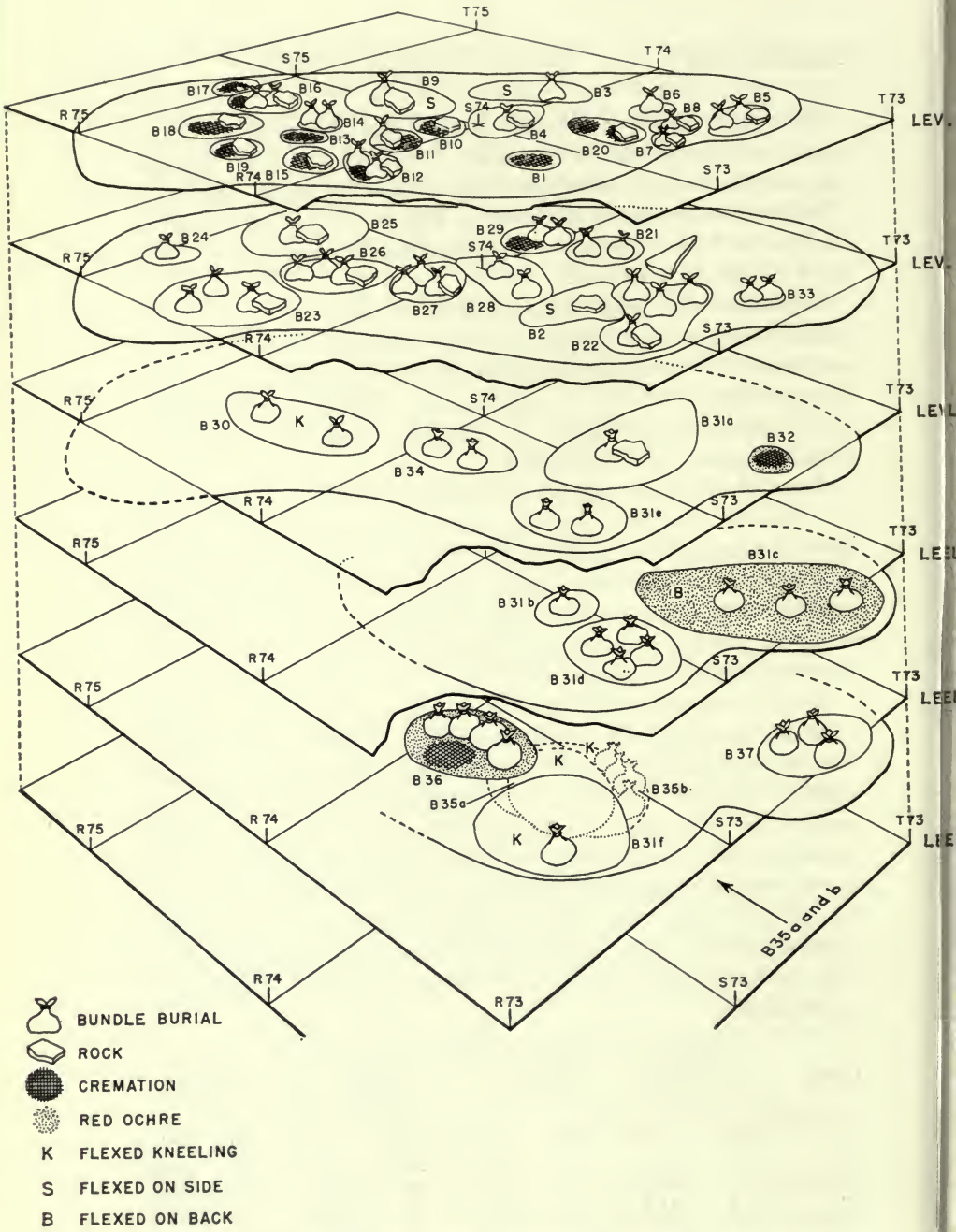

Figure 7. Burial types and mortuary practices, Feature 25.

The mortuary practices under consideration are mantles of sandstone or limestone covering burials and the presence of red ochre with the bones (Table 4). The rock slabs occur in levels 3 through 1, but predominately in levels 1 and 2. Red ochre, on the other hand, is present with burials in levels through 3, but decreases in frequency toward level 3. Within Feature 25, rock coverings and red ochre are mutually exclusive: no burial in which red ochre occurs is covered with stones.

TABLE 4. PRESENCE OF ROCK COVERINGS AND RED OCHRE OVER INDIVIDUALS BY LEVEL — FEATURE 25

Level	Rock Present		Red Ochre		Total Individuals
	No.	%	No.	%	
1	21	72.4	0		29
2	16	61.5	0		26
3	1	1.1	1	1.1	29
4	0		3	3.8	8
5	0		5	50	10
6	0		0		5

Changes in the burial modes discussed above imply a change through time in the accepted view of how dead bodies (or, at least, some dead bodies) should be treated. The increased number of cremations, with an accompanying decrease in number of primary flexed burials whose positions also change through time, as well as the shift from anointing with red ochre to the use of rocks to cover bodies or bones, clearly show change in one aspect of the non-material culture pattern.

Feature 25 shows this order of change but there remains the question of how the other burial features at the site fit into the configuration of change. A survey of burial types present in Features 1 through 24 and Feature 26, indicates a large number of cremations, a flexed burial resting on the side, and bundle reburials. Rock coverings are present on 26 (63.4%) of 41 individuals. Red ochre does not occur.

Since slab coverings are present and red ochre is not, it seems that these burials should be equated with levels 1 and 2 of Feature 25. When all burials outside Feature 25 are lumped (Table 5) the frequency of cremations is greater than in Level 1 of Feature 25 and the frequency of bundle burials

is correspondingly lower. The only primary burial outside Feature 25 rests on its side. These relative numbers of burial types are congruent with Level 1 of Feature 25. If the trend toward increased use of cremation seen in Feature 25 continued, then burials in the other features may postdate those of Feature 25 by virtue of their greater relative frequency of cremations.

TABLE 5. BURIAL TYPES, FEATURES 1 THROUGH 24, FEATURE 26

Cremated		Flexed		Bundle reburial		Total	
No.	%	No.	%	No.	%	No.	%
25	61.0	1	2.4	15	36.6	41	100.00

One burial has not been discussed heretofore because it does not conform to the modes of treatment of the dead seen in levels 1 and 2 of Feature 25. This is Burial 3 of Feature 10. This primary burial was flexed and lay on its back. Red ochre had been sprinkled over the body and rock slabs piled upon the legs. This is the only instance where rocks and red ochre are both associated with a burial. In Feature 25, the only level where rocks and red ochre occur is level 3. Hence, it appears that Burial 3 of Feature 10 probably corresponds to Level 3 of Feature 25.

Due to the paucity of artifacts found at Price III, comparisons with other burial sites is best made on the basis of mortuary customs. Consideration of mortuary customs described for Price III indicates that the site shares many traits with burial ground attributed to the Late Archaic stage and fewer traits with those burial complexes attributed to the Early Woodland stage. Comparisons with other sites are limited to the following mortuary customs: pit burial on knolls or rises; bundle reburials, cremation, and flexed primary burials; rock slabs covering burials and the sprinkling of red ochre over burials. A change in frequency of burial types has been noted for Price III. However, for purposes of comparison, the diversity in burial types appears to be of more importance than frequency change.

Within the midwest area, generalized or specific affinities can be seen with sites classified as Late Archaic, Old Copper,

Red Ochre, and Glacial Kame. A wealth of various elaborate artifacts are found in these burial sites. However, since this is not true for Price III, it is only through a comparison of its mortuary customs and those of the sites mentioned above that similarities can be seen.

Price Site III has generalized affinities to Old Copper cemeteries in Wisconsin. Bundle reburials, primary flexed and extended burials, and cremations, all in pits, were found in a gravel ridge at the Reigh site (Barreis et al, 1957). In the course of later excavations, red ochre was found covering several extended burials at this site (Ostberg, 1957; Meyer and Lunsted, 1957). This variable pattern of interment also characterized the Oconto site (Ritzenthaler and Wittry, 1957). at the Osceola site, cremations and bundle burials were located in a grave pit. Here, three individuals were each covered with a blanket of small stones (Ritzenthaler, 1957).

The Riverside site, Menominee,Michigan, provides a tighter comparison. Bundle, cremations and flexed burials often covered with red ochre lay in grave pits dug in a sandy knoll. Two of the burials lay beneath limestone rocks (Hruska, personal communication).

Mortuary customs identical to those at Price III characterize the burials found in pits beneath a Middle Woodland mound at the Klunk site, Calhoun County, Illinois. Seven pits contained cremations which were either bundles of cremated bone or partially cremated, flexed burials. Red ochre covered the remains in one pit. Other pits below the mound contained unburned bundle and flexed burials with some resting on the side while others lay on the back. Pits and skeletons were covered with limestone slabs. This component at the Klunk site is now thought to be Late Archaic (Perino, 1962 and personal communication).

There are also resemblances to the Early Woodland, Black Sand, burials at the Liverpool site, Fulton County, Illinois. Here skeletons are flexed either on the back or side. Disarticulated bones which are also present may represent bundle reburials. Interestingly enough, platforms of stone were found adjacent to or above four of the burials at this site (Cole and Deuel, 1937).

In an article synthesizing information on Late Archaic Red Ochre burial sites, Ritzenthaler and Quimby list these traits: burial within pits on ridges or knolls of sand, gravel, or loess; inclusion of red ochre in graves, and flexed burials. Cremations and bundles are considered as peripheral traits (1962).

Glacial Kame sites have similar burial traits (Cunningham, 1948) and are, in fact, mainly distinguishable from Red Ochre sites on the basis of artifact types associated with burials. Ritzenthaler and Quimby feel that the final phases of Old Copper probably merge into Red Ochre and Glacial Kame and the people responsible for these manifestations were followers of the basic Old Copper cultural tradition (1962:251-253).

A similar hypothesis is expressed by Ritchie who proposes that a burial cult was extant on an Early Woodland horizon in the Northeast and the Great Lakes area. This cult expresses itself through certain burial traits which include cremation, bundle, and flexed primary burials, covered with red ochre and placed in pits on a knoll, with a great variety of mortuary offerings present.

In New York, the expression of this cult can be seen at the Indian River sites as well as at other, Early Point Peninsula burial sites. Red Ochre and Glacial Kame manifestations are interpreted as regional, or perhaps, temporal variants of this cult in the Great Lakes area.

Ritchie also suggests that the cult has its roots in various Archaic cultures such as Brewerton and Frontenac of New York, Red Paint of Maine, shell-mound Archaic of the southeast, and Old Copper (Ritchie, 1955). When we view this from the standpoint of mortuary customs, it is apparent that Price Site III relates strongly to the sites mentioned above which are classified as Late Archaic in the Great Lakes and midwest area. Interestingly enough, in their survey of burial sites, Ritzenthaler and Quimby mention that there are many sites which probably fit into a burial complex, of which Red Ochre is a part, but which cannot be classified as Red Ochre per se. "There seems to be some Late Archaic cultures other than Glacial Kame that resemble Red Ochre and probably are related to it." (1962:256).

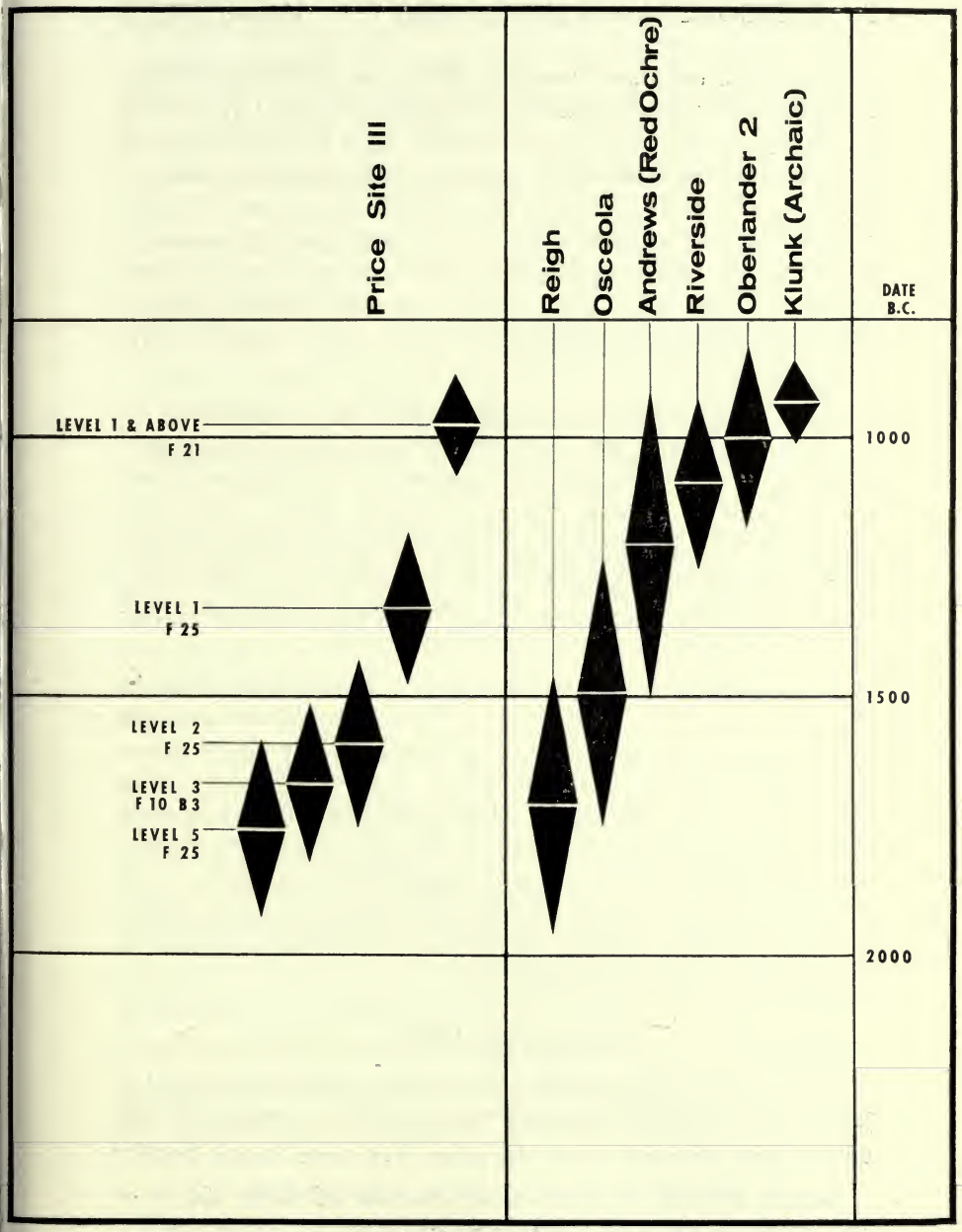

Figure 8. Price Site III and Late Archaic radiocarbon dates. Klunk, M1160 (Perino: personal communication); Oberlander 2, C192 (Arnold and Libby: 1951, 113); Riverside, M658 (Crane and Griffin: 1958, 128); Andrews, M659 (Flint and Deevy: 1960, 34); Osceola, M643 (Flint and Deevy: 1959, 182); Reigh, M644 (Ibid.)

It is suggested that Price Site III is one such site, related through mortuary customs to burial sites presently viewed as belonging to the Late Archaic stage. In a broader sense, it can be seen that this site is related to Northeastern sites assigned to the Early Woodland stage and that all are constituents of a burial complex which is characterized by the burial traits previously discussed. Apparently the inclusion of grave goods with burials is highly variable. In some burials there are frequent and copious offerings; in others, such as Price III, they are frequent and scanty.

Some stone artifacts from Price III can be classified as either Late Archaic or Early Woodland. The Side-notched points from this site are like those associated with the Black Sand burials in Illinois (Cole and Deuel, 1937). They are also similar to the Archaic, Raddatz Side-notched (Wittry, 1959) and Osceola points from the Osceola Old Copper cemetery (Ritzenthaler, 1957). This point style persists through the Archaic into the Early Woodland period.

Price Stemmed points at the adjacent Price village sites are possibly associated with Early Woodland pottery but are more strongly representative of the Middle Woodland occupation there (personal observation). Copper fishhooks have been found at the Oconto, Riverside, and Klunk burial grounds whose similarities in burial traits to Price III have been shown.

None of the artifacts can be considered diagnostic of a particular period or stage. Like the mortuary customs of this site, the artifacts indicate affinities to the Archaic and to a lesser degree to Early Woodland.

Radiocarbon Dates

Three of the eight samples submitted to the University of Michigan Memorial Phoenix Radiocarbon Laboratory for dating were charred wood; the other five were human bone.

Sample M1438. Charred wood Feature 15 dates 200 + − 100 years age or A. D. 1750 + − 100.

Sample M1439. Charred wood from Feature 17 which contained a cremation and a Price Stemmed projectile point dates 450 + − 100 years ago or A. D. 1500 + − 100.

Sample M1440. A sample of the charred wood forming a layer over Burial 3, Feature 10 dates at 4180 + − 150 years ago or 2230 B. C. + − 150.

Sample M1441. Bone from Burial 3, Feature 10 dates 3620 + − 150 years ago or 1670 B. C. + − 150.

Sample M1442. Bone from Burial 4, the first level of Feature 25, dates 3280 + − 150 years ago or 1330 B. C. + − 150.

Sample M1443. Bone from Burial 22, second level of Feature 25, dates 3540 + − 150 years ago or 1590 B. C. + − 150.

Sample M1444. Bone from Burial 31f, fifth level of Feature 25, dates 3710 + − 150 years ago or 1760 B. C. + − 150.

Sample M1445. Bone from Burial 1, Feature 21 dates 2920 + − 130 years ago or 970 B. C. + − 130.

Considering the proposed affiliations of Price III and in light of the dates yielded by M1440 through M-1445, the dates for Features 15 and 17 are much too recent. The date calculated for charcoal from the layer of burned wood resting over Burial 3 of Feature 10 is older than that for bone from the skeleton in Burial 3. It would appear, then, that this date must also be rejected.

The dates for Price III, when correlated with the burial levels, provide the sequence seen in Figure 8. The sequence of dates follow the burial sequence. However, a span of 600 years for this burial ground is undoubtedly too long. The dates for Price III do cluster within the time span for burial grounds in the Eastern United States which have been shown to be similar to this site in burial traits, the older dates being equal to the Old Copper sites in Wisconsin and the younger equal to sites classified as Red Ochre or Late Archaic and also those that Ritchie places within the framework of a burial cult.

The later date for the Burial in Feature 21 does support the hypothesis that small features were excavated later than Feature 25.

SUMMARY AND CONCLUSIONS

The change in burial customs does not appear to be the result of an influx of new peoples with different cultural or religious views, since Peterson and Schacht (accompanying paper) cannot establish different groups within the burial

ground population. It has been shown that the mortuary customs characteristic of Price Site III also occur in various combinations at many other burial grounds which are variously classified as Late Archaic and/or Early Woodland. These customs, with their multiplicity of burial types, and often accompanied by red ochre or rock slabs covering burials, are apparently alternate ways of treating the dead within a broad burial complex which is widespread in the northeastern United States. Hence, while change in mortuary customs does occur at Price III, the change is entirely within the cultural tradition of this burial complex.

One of the problems in classifying burial grounds within this complex is that the grave goods, sometimes elaborate, have not yet been adequately related to the artifact assemblages recovered from coeval habitation sites. At Price III, where grave goods are less elaborate than at sites classified as Red Ochre, Glacial Kame, or Old Copper, for example, the artifacts are not sufficiently diagnostic to permit the establishment of exact cultural and temporal affiliation for the site.

The radiocarbon dates for Price III indicate a use span of 600 years for the burial ground. Within a time span of this duration, one would expect to find a greater number of individuals represented at the burial ground, a greater depth, and more disturbance of earlier burials by later interment. Instead we have a rather shallow site occupying a fairly restricted area, with no disturbance of graves by later burial intrusion: nor is significant time lapse among levels indicated by stratigraphic hiatuses. This configuration of the burial ground again speaks for use by a single group over a relatively short period of time.

The cluster of radiocarbon dates does indicate, however, that burial at Price III took place during approximately the same time period that it did at other sites sharing this burial complex. The dates also fit the time range which is thought to correspond to the Late Archaic Stage in Wisconsin. The artifacts, while not diagnostic, do not militate against the assumption that Price III is probably a Late Archaic manifestation.

APPENDIX I [2]

DESCRIPTION OF BURIALS FROM PRICE SITE III

Feature 1

Burial 1

Cremation
Male
Middle-Aged

The temporal bone is burned. Long bones range from burned and fire-smudged to unburned. The head of the left femur remained in the left acetabulum. The right tibia, fibula, the lower four lumbar vertebrae and the sacrum lay in correct anatomical position. Calcined human bone was dispersed throughout the pit fill.

Sandstone slabs, lying 1.2' below the pit's surface, rested directly upon the burial.

Feature 2

Burial 1

Cremation
Male
Adult

Skull fragments are calcined. The left side of the post-cranial skeleton was calcined. The right side was burned with most of the bones in articulation.

Sandstone slabs lay at the surface of the pit and rested directly on the burial.

Feature 3

Burial 1

Cremation
Female
Young adult

The skelton was fire-smudged to slightly burned, flexed, and lay on the right side, head to the west. A mass of neoplastic bone fiber lay in the thoracic region of the remains.

A large granitic rock, protruding slightly above the pit surface, rested on sandstone slabs which covered the burial.

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[2] **Determination of age and sex and osteological description was performed by William H. Wilson working under National Science Foundation Grant G21570.**

Feature 4

It was impossible to determine the number of individuals represented here since the calcined human bone was dispersed through the pit fill.

Feature 5

Burial 1

Cremation
Male
Young adult

None of the skeleton above the pelvis was present. The remaining left members were calcined while the right side was burned with the bones of the right lower extremities articulated in a flexed position.

Sandstone slabs were located at a depth of .4' below the pit surface. The burial lay at a depth of 1.75' from the pit surface and 1.35' beneath the slabs.

Feature 6

Burial 1

Cremation
Male
Middle-Aged

The calverium and lower right extremities were burned. The lower extremities were calcined.

Feature 7

Burial 1

Cremation
Age and sex unknown

The fragmentary skull, ribs, and long bones are burned. Sandstone slabs were located at a depth of .4' below the pit surface and .6' above the burial.

Feature 8

Burial 1

Bundle reburial
Male
Adult

The remains are fragmentary.

The bones were located under sandstone slabs and rested upon other slabs which covered Burial 2.

Burial 2

Cremation
Male
Young adult

The right side of the post-cranial skeleton was fire-smudged and burned. The left side was not present. The skull was unburned and rested on top of the cremated remains.

The burial lay under sandstone slabs.

Feature 9

Burial 1a

Cremation
Female
Middle-Aged

The right side of the post-cranial skeleton was not present. The rest of the bones were fire-smudged to calcined. The skull exhibits a fracture in the center of the right parietal which was probably the cause of death. The size of the ovois fracture depression is 57mm. to 34mm.

Two worked sections of human femur, one probably male and the other female, to judge from their respective sizes were found with this burial.

Burial 1b

Cremation
Male
Adult

Burned and calcined fragments of the calverium and left lower extremities were present.

Sandstone slabs were located over the burial.

Burial 2

Cremation
Female
Middle-Aged

The skeltal fragments were burned. The left humerus exhibits an old fracture above the distal end.

Sandstone slabs covered the burial.

Feature 10

Burial 1a

Bundle reburial

Sex is unknown for this infant whose age is estimated from 5 months **in utero** to 2 months **in vivo.**

The bones were fragmentary.
Sandstone slabs were located .4' from the pit surface and .9' above the location of Burial 1a, 1b, and 2.

Burial 1b

Bundle reburial

Aged at 5 months **in utero** to 2 months **in vivo.** Burials 1a and 1b may be twins to judge from the similarity of measurements of the bones.

The bones are fragmentary.

Burial 2

Bundle reburial

Sex is unknown for this infant aged 3 to 6 months.

The rib cage was in articulation; other bones were fragmentary.

Burial 3

Primary burial
Male
Middle-Aged

The skeleton was extended on its back, head to the south with the legs flexed to the right.

The burial lay at a depth of 3.05' from the pit surface. Sandstone slabs were located over the legs and red ochre covered the skeleton. A layer of charcoal was present .4' above the skeleton. The charcoal yielded C^{14} date M1440 and the bones C^{14} date M1441.

Feature 11

Burial 1

Cremation
Male
Adolescent

Some of the fragmentary bones are unburned with some fire smudged, or calcined.

Sandstone slabs were located both over and under the burial.

Burial 2a, b, c, (three individuals)

Cremation
Add adults, sex unknown

The bones are fragmentary. They range from unburned to burned or calcined.

Sandstone slabs were located over these individuals.

Burial 3

Cremation
Child, sex unknown
The post-cranial skeletal fragments were burned and skull fragments calcined.

Sandstone slabs were located over the burial.

Burial 4

Primary burial
Male
Young adult
The skeleton was tightly flexed on the right side with the skull to the west.

The burial was under the sandstone slabs which lay beneath Burial 1.

Feature 13

All burials were located .3' to .5' below the pit surface.

Burial 1

Bundle reburial
Age and sex unknown
The bones are fragmentary.

Burial 2a

Bundle reburial
Male
Middle-Aged
The bones are fragmentary.
Sandstone slabs lay over the burial.

Burial 2b

Bundle reburial
Female
Middle-Aged
The bones are fragmentary.
Sandstone slabs rested on the skeleton.

Burial 3

Bundle reburial
Adult of unknown sex.
The bones are fragmentary.

Burial 4

Cremation
Female
Adult
The post-cranial skeletal fragments are unburned while the calverial fragments, mandible and teeth are calcined. This suggests decapitation prior to cremation and burial.

Burial 5

Bundle reburial
Male
Adult
The thoracic vertebrae, the left radius and ulna lay in correct anatomical position. The rest of the skeleton is represented by fragments.

Burial 6

Bundle reburial
Adult of unknown sex

The bones were few and fragmentary.
A side-notched projectile point was located next to the bones.

Burial 7

Cremation
Male
Adolescent
Burned and unburned bones are present.
Sandstone slabs were located directly over the burial.

Feature 14

Burial 1

Cremation
Age and sex unknown
Small fragments of calcined bone were scattered throughout the fill of the pit.
A flat piece of granite lay .4' below the pit surface.

Feature 16

Burial 1

Cremation
Female
Adult
The fragmentary bones are burned and calcined.

Feature 17

Burial 1

Cremation
Age and sex unknown
The fragmentary bones are calcined, burned, and ununburned.
A Price Stemmed projectile point was located in the fill of the pit. Charcoal from the pit yielded C^{14} date M1438.

Feature 18

Burial 1

Cremation
Age and sex unknown
The bone fragments are calcined.
A sandstone slab was located over the cremated remains.

Feature 19

Fragments of calcined human bone were found throughout the pit fill.

Feature 21

Burial 1

Bundle reburial
The sex is unknown for this adult
The bones are fragmentary.
Three sandstone slabs were located .4' below the pit surface and immediately above the burial. The bones of this burial yielded C^{14} date M1445.

Feature 23

Burial 1a

Bundle reburial
The sex is unknown for this adult
The bones are fragmentary.
This burial was located directly over Burial 1b.

Burial 1b

Bundle reburial
Female
Adolescent
The bones are fragmentary

Burial 1c

Bundle reburial
Infant of unknown sex
Fragments of the cranium and vertebral column were present.

Feature 24

Calcined human bone fragments were found scattered throughout the pit fill. Three concentrations of calcined bone were uncovered: one at a depth of .3' from the pit surface, another resting on a sandstone slab, and the third under another sandstone slab at a depth of 1.85' from the pit surface. At least two individuals are represented by these calcined bone fragments.
A broken projectile point was located next to the bone concentration at 1.85' from the pit surface.

Feature 25

Level 1 — The individuals in this level were located .3' to .4' below the surface of the pit. Below the surface of the pit was an irregular layer of sandstone and limestone slabs which covered most of the burials in this level.

Burial 1

Cremation
Adult of unknown sex

A few fragments of calcined and unburned bone were present.

Burial 3a

Primary burial
Male Middle-Aged

The skeleton was tightly flexed and lay on the left side with the skull to the northeast.

Burial 3b

Bundle reburial
Adult of unknown sex

The skull and long bone fragments were present.

Burial 4

Bundle reburial
Male
Adolescent

The head of the right femur was in the right acetabulum; the remainder of the bones were disarticulated.

Sandstone slabs rested on the burial. The bones yielded C^{14} date M1443.

Burial 5a

Bundle reburial
Male
Middle-Aged

The bones are fragmentary.

A limestone slab was located over the burial.

Burial 5b

Bundle reburial
Female
Young adult

The bones are fragmentary.
A sandstone slab lay over the burial. A side-notched point lay next to the bones.

Burial 6

Bundle reburial
Female
Middle-Aged

The bones are fragmentary. Unidentified, calcined bone was also present in the pit.

Burial 7

Bundle reburial
An infant of unknown sex

The bones are fragmentary.
A small piece of granite lay over the bones.

Burial 7

Bundle reburial
Child of unknown sex
The bones are fragmentary.
Sandstone slabs lay over the bones.

Burial 9a

Primary burial
Male
Young Adult

The skeleton was tightly flexed on the left side with head to the northeast.

The burial was located under a group of sandstone and limestone slabs.

Burial 9b

Bundle reburial
Male
Middle-Aged

The bones are fragmentary.

The burial was located under the same group of rocks as Burial 9a.

Burial 10

Cremation
Male
Adult

The bones of the left side of the skeleton are fire-smudged while those of the right side are calcined.

The burial was under the same group of slabs which covered Burials 9a and 9b.

Burial 11a

Cremation
Adult of unknown sex

The bones are fragmentary, fire-smudged and unburned.

Sandstone slabs lay over the burial.

Burial 11b

Bundle reburial
Child of unknown sex

The bones are fragmentary.

The burial was located under sandstone slabs.

Burial 12a

Cremation
Male
Young adult

The lower extremities were not present. The other bones of the skeleton are fire-smudged, calcined, burned, or unburned. The tip of a projectile point was found in the body of the third thoracic vertebra. The tip had entered the left lateral aspect between the upper and lower demifacets. It could have severed the intercostal artery, the highest intercostal vein, and possibly the sympathetic trunk. The direction of entry would have been from the left side between the third and fourth ribs, penetrating the vertebra about 5mm. It is reasonable to assume that this was the cause of death. (Fig. 6a)

Sandstone slabs were located over the burial.

Burial 12b

Bundle reburial
Infant of unknown sex

The bones are fragmentary.

The burial lay under sandstone slabs.

Burial 12c

Bundle reburial
Child of unknown sex

The bones are fragmentary.

Sandstone slabs lay over the burial.

Burial 13

Cremation
Male
Adult

The bones are burned and fire-smudged.

The burial was on top of a sandstone slab.

Burial 14a

Bundle reburial
Male
Adult

The bones are fragmentary.

Burial 14b

Bundle burial
Male
Adult

The bones are fragmentary.

Burial 15

Cremation
Adult of unknown sex

The bones are fire-smudged and calcined.

Sandstone slabs were located over the burial.

Burial 16a

Cremation
Male
Adult

The bones are burned, calcined, and unburned.

A group of sandstone slabs rested on the burial.

Burial 16b

Bundle reburial
Male
Adolescent

The bones are fragmentary.

Sandstone slabs lay over the burial.

Burial 16c

Bundle reburial
Male
Adult

The bones are fragmentary.

Sandstone slabs lay on the bones

Burial 17

Cremation
Adult of unknown sex.

The bones are burned and fire-smudged.

Burial 18

Cremation
Male
Middle-Aged

The bones are burned and fire-smudged.

The burial was located under sandstone slabs.

Burial 19

Cremation
Child of unknown sex.

The bones are calcined and fire-smudged.

The bones were located under limestone slabs.

Burial 20a

Cremation
Child of unknown sex

The bones are burned and fire-smudged.

The burial was located under a group of limestone rocks.

Burial 20b

Cremation
Adult of unknown sex

The bones are burned and fire-smudged.

The burial was under the same group of rocks that covered Burial 20a.

Level 2 — The burials in this level are all located .5' to 1.1' below the surface of the pit.

Burial 21

Primary burial
Child of unknown sex

The skeleton was tightly flexed on the side with head to the north. The bones are fragmentary.

The burial was located under sandstone slabs .9' from the pit surface and under Burial 1.

Burial 21a

Bundle reburial
Male
Middle-Aged

The skull and long bone fragments are present.

This burial was located .9' from the pit surface and partially under Burial 6.

Burial 21b

Bundle reburial
Female
Middle-Aged

The skull and fragments of the long bones are present. The burial was located .9' from the pit surface and partially under Burial 6.

Burial 22a

Bundle reburial
Male
Adolescent

The mandible and long bones are present.

Burial 22b

Bundle reburial
Infant of unknown sex

Mandible and pelvis present.

Burial 22c

Bundle reburial
Male, judging from the size of the bones
Adult

Long bones present.

Burial 22d

Bundle reburial
Female, judging from the size of the long bones
Adult

Long bones present.

Burial 22e

Bundle reburial
Male, judging from size of long bones
Adult

All individuals comprising Burial 22 were located at a depth of .7' from the pit surface under a group of sandstone slabs and under Burials 7 and 20. Bones from this burial yielded C^{14} date M1444.

Burial 23a

Bundle reburial
Male
Middle-Aged

Long bones and skull fragments are present. The right ulna exhibits a poorly-healed fracture.

Burial 23b

Bundle reburial
Female, judging from size of the long bones.
Adult

Long bones present.

Burial 23c

Bundle reburial
Child of unknown sex

The bones are fragmentary.

The individuals comprising Burial 23 lay at a depth of .7' from the pit surface under sandstone slabs and under Burial 19.

Burial 24

Bundle reburial
Adult of unknown sex

The bones are fragmentary.
The burial was located .9' from the surface of the pit.

Burial 25

Bundle reburial
Female
Adolescent

The left humerus and radius are present and the skeleton is complete below the inominate. The left leg is articulated and flexed. The right leg is articulated but was found removed from the pelvis and inverted. The bones of the right leg are gnawed so it is possible that a carnivore was responsible for the displacement of the leg. Since rocks were present over the burial, it is doubtful

that placing a burial above Burial 25 was responsible for this disturbance.

The burial was at a depth of .86' from the pit surface and under Burial 16.

Burial 26a

Bundle reburial
Male
Middle-Aged

Fragmentary long bones, mandible and calverium are present.

Burial 26b

Bundle reburial
Child of unknown sex

Mandible and calvarial fragments present.

Burial 26c

Bundle reburial
Male
Middle-Aged

Sandstone slabs partially covered the individuals in Burial 26. The burial was located at a depth of .5' from the pit surface and under Burial 14.

Burial 27

Bundle reburial
Male
Young adult

The skull and fragmentary long bones are present.

Burial 27b

Bundle reburial
Male
Middle-Aged

Fragments of the mandible and lower extremities were present.

Burial 27c

Bundle reburial
Male
Young adult

Long bones were present.

A large sandstone slab covered the individuals in Burial 27. This burial was located .6' from the pit surface and under Burials 10 and 11.

Burial 28a and b

Bundle reburial

Adult male and female, judging from the sizes of the long bones.

The burial consisted of articulated thoracic bones, fragments of the mandible, pelvis, scapula, and upper extremities.

The burial was located 1.0' from the pit surface and under Burial 4. One bone projectile point and the tip of another were found with this burial.

Burial 29a

Cremation
Male
Middle-Aged

The valvarium is calcined and other skeletal fragments are burned or fire-smudged.

Burial 29b

Bundle reburial
Female
Adolescent

The bones are fragmentary.

Burial 29c

Bundle reburial
Infant of unknown sex

The bones are fragmentary.

The individuals of Burial 29 were found at a depth of 1.05' from the pit surface and under Burials 1 and 4.

Burial 33a

Bundle reburial
Male
Adolescent

The bones are fragmentary.

Burial 33b

Bundle reburial
Male, judging from the size of the bones
Adult

Two femora present.

The individuals of Burial 33 were located .9' from the pit surface.

Level 3 — The burials in this level were located at a depth of 1.1' to 1.45' from the surface of the pit. Those individuals listed under Burial 31 comprised a group located close to each other and in superposition.

Burial 30a

Primary burial

Male
Middle-Aged

The body had been placed in a kneeling position, facing northeast, with legs flexed so that the heels touched the hips. When uncovered, the vertebral column had slumped forward so that the skull rested on the knees.

Burial 30b

Bundle reburial
Female
Adult

Long bones and the inominate are present.

Burial 30c

Bundle reburial
Child of unknown sex

Long bones and inominate fragments are present.

This burial was located 1.15' from the pit surface and under Burial 26.

Burial 31a

Bundle reburial
Female
Adult

Long bones and mandible fragments are present.

The burial was located 1.3' below the pit surface, under a large rock and under Burial 22.

Burial 31e — 1 and 2

Bundle reburial
Male and female to judge from size of long bones
Adult

Long bones are present.

The individuals were located 1.4' from the pit surface.

Burial 32

Cremation
Unknown age and sex

Bones are calcined and covered with red ochre.

The burial was located at a depth of 1.4' from the pit surface and under Burial 33.

Burial 34a

Bundle reburial
Female
Adult

Long bones and an articulated rib cage present.

The burial was located 1.2' from the pit surface and partially under Burial 27.

Level 4 — The burials in this level are located at depths of 1.45' to 1.75' from the surface of the pit.

Burial 31b

Bundle reburial
Male
Adult

The lower extremities are present.

The burial was located 1.6' from the pit surface and under Burial 31a.

Burial 31c - 1

Primary burial
Female
Middle-Aged

The body had been placed on the back with legs flexed.

The skull was not present and, even though knife marks were not present on the vertebra it seems probable that this is an instance of decapitation.

The skeleton was covered with red ochre.

Burial 31c - 2

Bundle reburial
Child of unknown sex
The bones are fragmentary and covered with red ochre.

The individuals comprising Burial 31c were found at a depth of 1.75' from the pit surface and under Burial 32. The bottom of the pit in which Burial 31c had been placed was discernible since it was lined with red ochre.

Burial 31d - 1 through 4

Bundle reburial
Three adult males, judging from long bones, size, and one adolescent.

Long bones present.

A copper fishhook was found with Burial 31d.
These individuals were located at a depth of 1.6' from the pit surface and under Burial 22 of Level 2.

Level 5 — The individuals in this level were located at depths of 1.8' to 1.85' from the surface of the pit.

Burial 31f - 1

Primary burial
Male
Middle-Aged

The body had been placed in a kneeling position, facing northwest, with legs flexed in a frog position. At the time of excavation, the vertebral column had slumped forward and the skull lay face-down in the lap.

Burial 31f - 2

Bundle reburial
Male
Adolescent

The right inominate and femur are present. Bones yielded C^{14} date M1444.

The individuals in Burial 31f were located 1.8' from the pit surface and partially under Burial 31d. A perforated bear canine was found with these individuals.

Burial 36a

Bundle reburial
Female
Middle-Aged

The skull and fragments of the entire skeleton were present. Red ochre covered the long bones but not the skull.

Burial 36b

Bundle reburial
Male
Middle-Aged

Long bones and the skull, covered with red ochre, are present.

Burial 36c

Bundle reburial
Male
Middle-Aged

Skull and long bones present and covered with red ochre.

Burial 36d

Bundle reburial
Child of unknown sex

Long bones were present and covered with red ochre.

Burial 36e

Cremation
Adult of unknown sex

All bones are calcined and covered with red ochre.

The individuals comprising Burial 36 were located at a depth of 1.8' from the pit surface and under Burial 34.

Burial 37a

Bundle reburial

Female
Middle-Aged

Calvarium and long bones are present.

Burial 37b

Bundle reburial
Infant of unknown sex

The bones are fragmentary.

Burial 37c

Bundle reburial
Infant, 7 months in utero to 3 months in vivo

The pelvis and bone fragments are present.

Individuals in Burial 37 were located at a depth of 1.85' from the pit surface and under Buiral 31c in Level 4.

Level 6 — Six individuals, all designated as Burial 35, were grouped together.

Burial 35a

Primary burial
Female
Adolescent

The body had been placed in a kneeling position facing southwest, with legs flexed in a frog-like position. The skull had fallen back and the vertebral column had slumped backward over it.

The individual was 2.3' from the pit surface and under Burials 21 and 29 in Level 2.

Burial 35b

Primary burial
Male
Middle-Aged

The body had been placed in a kneeling position, facing northeast, with legs flexed to the right. At the time of excavation the skull had fallen and lay upside down on the lap while the vertebral column was still upright.

The burial was located 3.3' from the pit surface and immediately below Burial 35a.

Burial 35c

Bundle reburial
Male
Middle-Aged

Only the skull was present and located 3.3' from the pit surface and next to Burial 35b.

Burial 35d and e

Bundle reburial

Two humerii present at 3.3' from the pit surface.

Burial 35f

Bundle reburial
Child of unknown sex
Only the zygomatic was present at 3.3' from the surface.

Feature 26

Burial 1

Bundle reburial
Male
Adult
The bones are fragmentary.

AGE AND SEX DISTRIBUTION OF THE SKELETAL POPULATION AT PRICE SITE III

	Male	Female	Totals
ADULTS			
Sex and age	27	10	37
Sex only	21	9	30
No sex or age			18
Total			85
ADOLESCENTS			12
CHILDREN			13
INFANTS			10
UNKNOWN			10
TOTAL			130

REFERENCES CITED

Arnold, J. R. and W. F. Libby
1951 Radiocarbon Dates. **Science**, p. 113.

Baerreis, David A., Hiroshi Daifuku, and James E. Lunstead
1957 The Burial Complex of the Reigh Site, Winnebago County, Wisconsin. **The Wisconsin Archeologist**, Vol. 38, No. 4, pp. 244-277.

Cole, Fay-Cooper and Thorne Deuel
1937 **Rediscovering Illinois.** The University of Chicago Press, Chicago, Illinois.

Crane, H. R. and J. B. Griffin
1958 University of Michigan radiocarbon dates III. **Science**, p. 128.

Cunningham, William M.
1948 A Study of the Glacial Kame Culture in Michigan, Ohio, and Indiana. Occasional Contribution, Museum of Anthropology, University of Michigan, No. 12.

Flint, R. F. and E. S. Deevey, Jr. (editors)
1959 American Journal of Science Radiocarbon Supplement, 1. p. 182.
1960 American Journal of Science Radiocarbon Supplement, 2. p. 34.

Meyer, Heinz E. and Edward Lundsted
1957 in Reigh Site Report—No. 3, edited by Robert Ritzenthaler, **The Wisconsin Archeologist,** Vol. 38, No. 4, pp. 294 - 310.

Ostberg, Neil J.
1957 in Reigh Site Report—No. 3, edited by Robert Ritzenthaler, **The Wisconsin Archeologist,** Vol. 38, No. 4, pp. 282 - 287.

Perino, Gregory
1962 A Review of Calhoun County, Illinois, Rehistory. **The Wisconsin Archeologist,** Vol. 43, No. 2, pp. 44 - 51.

Ritchie, William A.
1955 Recent Discoveries Suggesting an Early Woodland Burial Cult in the Northeast. New York State Museum and Science Service, Circular 40.

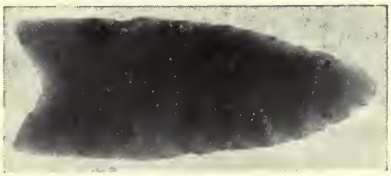
Ritzenthaler, Robert
1957 The Osceola Site, an "Old Copper" Site near Potosi, Wisconsin. **The Wisconsin Archeologist,** Vol. 38, No. 4, pp. 186-203.

Ritzenthaler, Robert and Warren L. Wittry
1957 The Oconto Site—An Old Copper Manifestation. **The Wisconsin Archeologist,** Vol. 38, No. 4, pp. 222-244.

Ritzenthaler, Robert E. and George I. Quimby
1962 The Red Ochre Culture of the Upper Great Lakes and Adjacent Areas. Chicago Natural History Museum, Fieldiana: Anthropology, Vol. 36, No. 11, pp. 243 - 275.

Wittry, Warren L.
1959 The Raddatz Rockshelter, Sk5, Wisconsin. **The Wisconsin Archeologist,** Vol. 40, No. 2, pp. 33 - 69.

Interesting Wisconsin Specimens



RICHLAND COUNTY CLOVIS POINTS

Both are quartzite and fluted on both sides. The larger one was found by a farmer 2 miles south of Mauston, and is now in the Buford Parduhn collection. The smaller one was found in section 29 of Richland township. Eugene Hynek collection.

AN ANALYSIS OF THE SKELETAL REMAINS OF PRICE SITE III, Ri 4 [1]

Martin Q. Peterson and Robert M. Schacht

The purpose of this project is to analyze a collection of skeletal material consisting of 30 individuals recovered during the excavation of Price Site III, a burial ground in southwestern Wisconsin. During excavation it was observed that there seemed to be a tendency toward size differences in long bones which was not correlated with age and sex. It was supposed that if such size differences were actually present, they might well reflect morphological differences of a magnitude sufficient to indicate population differences among members of the burial group.

Such field observations were tested through laboratory examination of the skeletal remains. This report considers the skeletal material from Price Site III and tests the hypothesis that these skeletal remains are **not** from two populations.

The skeletal remain of Price Site III were initially thought to be in a condition such that reconstruction would make possible a morphological description of the bones and the subsequent investigation of possible morphological variation through time. However, further examination of the material indicated that this approach would not yield dependable results.

Statistical treatment of the skeletal remains to determine significant variation was hampered by the fragmentary nature of the bones. Because of the small number of measurable crania, analysis could not be made on the basis of the cranial measurements, but, rather, had to depend on measurements collected from post-cranial material. An appraisal of all the post-cranial measurements which might possibly be used for statistical analysis revealed that only the diameters of long bones could be obtained from a sufficient number of specimens to make a statistical treatment meaningful. The post-cranial measurements common to the largest proportion of the remains were diameters of the humerus and femur.

Data for statistical analysis were collected from the Medial-lateral and Anterior-posterior midshaft diameters of both the humerus and the femur, and the maximum and minimum subtrochanteric diameter of the femur was used as well. Usually

it was not possible to identify specific humerii or femora as belonging to particular individuals, so no attempt was made to organize the data on the basis of associated specimens. With few exceptions it was possible to associate the midshaft and sub-trochanteric measurements for purposes of analysis.

It was necessary to assume that the long bone diameters taken were representative of the population from which they were drawn. Not every burial had measurable long bones, so the possibility exists, having no evidence to the contrary, that these unmeasured bones are significantly different from the ones which yielded data.

In order to test for significant variation, the skeletal remains were divided into two groups of approximately equal numbers of bones. Segregation of the bones into more than two groups would have rendered each group too small for proper treatment.

The vertical distribution of burials at the site was used for determining the inclusion of individual bones in one group or the other. Feature 25, a burial pit containing six levels of burials, provided a control for placement of remains in each of the two groups. All measurable bones from levels 1 and 2 of Feature 25 were placed into Group "A" while measurable bones from levels 3 through 6 of the same Feature were placed into Group "B".

Archaeological evidence indicated that Burial 3, Feature 10, corresponded to burials in levels 3 through 6 of Feature 25, so this burial was placed with Group "B". Burials in Features 1 through 24 and Feature 26 corresponded closely to the burials in levels 1 and 2, Feature 25; these burials were, therefore, sorted into Group "A".

Ideally, all individuals within a given burial level should be compared to all individuals in each of the other levels. However, the relatively small number of measurable bones in each level at Price III did not provide a sample of size adequate for this approach.

If there were actually two population groups represented at the burial ground, and the division into Groups "A" and "B" did not discriminate them, the variance within the group ("A" or "B") containing representatives of both distinct populations is represented. This would be true only if the measure-

ments used were actually able to discriminate two such populations. The possibility that Groups "A" and "B" might each contain members of each of two distinct populations in approximately equal numbers is remote. Were two distinct populations to exist through time under circumstances of such close physical proximity that they would share the same burial grounds and practices, a significant gene exchange precluding assortment into two "distinct" populations would have been likely.

Because bones were not identified as belonging to particular individuals, as explained above, each comparison was made on discrete diameters of a particular bone. The comparisons were:

1. left humerus misdhafts, Group A and B, measurements AP and ML
2. right humerous midshafts, Groups A and B, measurements AP and ML
3. left femur, midshaft, Groups A and B, measurements AP and ML
4. right femur, midshaft, Groups A and B, measurements AP and ML
5. left femur, midshaft and sub-trochanteric, Groups A and B, measurements AP and ML of the midshaft diameter, and Max. and Min. of the sub-trochanteric diameter
6. right femur, midshaft and sub-trochanteric, Groups A and B, measurements AP and ML of the midshaft diameter, and Max. and Min. of the sub-trochanteric diaamter.

where "AP" equals anterior-posterior, "ML" equals medial-lateral, Max. equals maximum sub-trochanteric diameter, and Min. equals minimum sub-trochanteric diameter.

All measurements were taken by one author and recorded by the other. The specimens were measured in random order to eliminate any error due to possible measurement drift of the observer and the indetification of each burial was concealed from the measurer until after the bones had been measured in order to avoid unconscious bias.

The method used in the analysis of human bone remains from Price Site III is the "measure of generalized distance,"

or D (Mahalanobis: 1936) as modified by Rao (1948) to the "square of the generalized distance," or D^2. This statistic allows the estimation of relationship to be represented spatially, so that a model may be constructed which better illustrates the actual distinctness of the several groups.

The first use of such quantative approximations of the actual morphological distinctiveness of various groups is not recent; Czekanowski, in 1909, suggested a method of classifying Neanderthals. The type of statistic to use in such an approach is not a matter of common agreement, as Campbell (1963) notes in his review article on the subject. Sanghvi (1953) has shown a high correlation between the description of various groups, each compared with all others, as analysed genetically and morphologically.

The D^2 statistic was used because, as Trevor (1947:73) points out, the intercorrelations between the various measurements are taken into account, and the sample size of each group does not influence the result. Also, indices are not necessary, since the ratios between the measurements are handled by the correlation coefficients.

Use of a computer was necessitated by the complexity of the D^2 method of multivariate analysis. The electronic computer also provides ease in handling the data, speed of computation, and avoidance of human error which might accrue to calculator analysis. The specific program used was adapted to the Control Data 1604 computer.

The results of the D^2 analysis provide an estimate of the "biological distance" in D^2 units, an F test of significance of the estimation of distance, an over-all test of significance, and a test of significance for each variable.

The absolute size of D^2 units is important only if the F test of these pairs of groups is significant, at least at the 5% level. The over-all test, which is not useful if only two variables are being compared, indicates the significance of the total test.

The statistical tests available for making such a discrimination are only able to demonstrate significant differences between two bodies of data and cannot show that the data are similar. Therefore, to be meaningful, any results must yield significant differences. Yet, if no such differences are shown, one cannot infer that the groups represented by the two

groups of data are necessarily identical. Hence, it is necessary that the null hypothesis be assumed.

RESULTS

Humerus, right midshaft

Means

Variable

	AP	ML
Group A	20.18	17.18
Group B	21.44	16.89

D^2 for each pair of Groups

	A	B
Group A	.00	.78
Group B	.78	.00

F-Test for each pair of Groups

	A	B
Group A	.00	1.83
Group B	1.83	.00

F, 5% level=3.59

F-Test for each Variable

AP F = 3.56

ML F = 1.46

F, 5% level = 4.45

Conclusion

Neither of the F-Tests is significant at the lowest level of common acceptance, 5%. We may accept the hypothesis that no differences have been shown to exist between Groups A and B on the basis of the variables AP and ML diameters of the left humerus.

Humerus, left midshaft

Means

Variable

	AP	ML
Group A	18.8	16.8
Group B	19.5	16.6

D^2 for each pair of Groups

	A	B
Group A	.00	,23
Group B	.23	.00

F-Test for each pair of Groups

	A	B
Group A	.00	.46
Group B	.46	.00

F-Test for each Variable

AP	.90
ML	.00

F, 5% level = 4.6

Conclusion

Neither of the F-Tests is significant, suggesting that the null hypothesis has been supported.

Femur, right midshaft

Means

Variable

	AP	ML
Group A	27.71	24.92
Group B	30.00	25.25

D^2 for each pair of Groups

	A	B
Group A	.00	.73
Group B	.73	.00

F-Test for each pair of Groups

	A	B
Group A	.00	2.05
Group B	2.05	.00

F, 5% = 3.37

F-Test for each Variable

AP	F = 3.96
ML	F = 1.32

F, 5% = 4.22

Conclusion

Since neiher F-Test is significant, the null hypothesis is accepted.

Femur, left midshaft

Means

Variable

	AP	ML
Group A	27.42	24.50
Group B	28.64	25.45

F-Test for each pair of Groups, 2 and 32 degrees of freedom

	A	B
Group A	.00	.74
Group B	.74	.00

F, 5% = 3.30

F-Test for each Variable, 1 and 32 degrees of freedom

AP	F = .10
ML	F = .37

F, 5% = 4.15

Conclusion

The null hypothesis is accepted.

Femur, right midshaft, plus sub-trochanteric

Means

Variables

	AP	ML	MAX.	MIN.
Group A	28.08	25.17	33.08	25.83
Group B	29.33	25.00	35.50	28.16

D^2 for each pair of Groups

	A	B
Group A	.00	1.32
Group B	1.32	.00

F-Test for each pair of Groups with 4 and 13 degrees of freedom

	A	B
Group A	.00	1.07
Group B	1.07	.00

F, 5% = 3.80

F-Test for each Variable with 1 and 13 degrees of freedom

AP	F = 0.27
ML	F = 1.20
MAX	F = 0.71
MIN	F = 0.52

F, 5% = 4.67

Conclusion

The null hypothesis is accepted.

Femur, left midshaft, plus sub-trochanteric

Means

	AP	ML	MAX	MIN
Group A	27.62	24.44	33.50	25.75
Group B	27.50	25.33	33.67	25.83

D^2 for each pair of Groups

	A	B
Group A	.00	.64
Group B	.64	.00

F-Test for each pair of Groups with 4 and 17 degrees

	A	B
Group A	.00	.59
Group B	.59	.00

F, 5% = 2.76

F-Test for each Variable with 1 and 17 degrees of freedom

AP	F = 1.49
ML	F = 2.31
MAX	F = 0.35
MIN	F = 0.53

F, 5% = 4.45

Conclusion

The null hypothesis is accepted.

The two hypothetical groups cannot be shown to be distinct on the basis of the preceding measurements.

In summary, significant statistical differences between two arbitrary groups (A and B) have not been demonstrated.

Certainly, if differences were found, factors other than that of simple genetic relationships would have to be examined. The possibility exisits that possible genetic differences between the the arbitrary groups, operating under different environmental pressures, might influence diameters of the long bones.

Use of a greater number of traditional measurements would have been preferable as the basis for analysis. Pragmatically, however, the fact that midshaft diameters of the humerus and

femur were the only measurements available for the largest number of individuals, was necessarily a decisive consideration.

It is suggested, then, that no demonstrable difference could be demonstrated between two hypothetical groups of the skeletal population encountered at Price Site III.

BIBLIOGRAPHY

Campbell, Bernard
1963 Quantitative taxonomy and human evolution, in **Classification and Human Evolution,** ed. by S. L. Washburn, Viking Fund Publication in Anthropology, No. 37, pp. 50-74.

Czekanowski, J.
1909 Zur Differentialdiagnose der Neandertalgruppe, **Korr. bl. Dtsch. Ges. f. Anthro., Ethnol.,** Urgesch. 15(6/7):44-47.

Mahalanobis, P. C.
1936 On the generalized distance in statistics, **Proc. Nat. Inst. Sci.** Indian, 12:49-55.

Rao, C. R.
1948 The utilization of multiple measurements in problems of biological classification, J. Roy. Stat. Soc., B., 10:159-193.

Sanghvi, L. D.
1953 Comparison of genetical and morphological methods for a study of biological differences, **Amer. J. Phys. Anthro.,** 2 (3):385-404 n. s.

Trevor, J. C.
1947 The physical characteristics of the Sandawe, **J. R. A. I.,** 77:61-78.

APPENDIX I

ANOMALIES AND PATHOLOGIES

William H. Wilson

This section will present a brief description of the range of abormalities found within the skeletal population at Price Site III.

Dentition

The most common trait is severe dental attrition, which affects males and females with equal frequency and is quite regular in its progression. In young adults, all enamel has been worn off the surfaces of the incisors and first molars. The other teeth range from slight enamel wear to a point

where the dentine is visible. At middle age attrition has progressed to the place where pulp cavities are often exposed in the first molar and the incisors in much the same condition. In the remaining teeth attrition is only slightly less severe. Alveolar abcesses in the area of the first molar make their appearance and carries are noted in the crown areas. By an estimated age of about 40, exposed pulp cavities are noted for most of the teeth. The abcesses are now periapical and generally involve the areas adjacent to the first molar. Tooth loss, floating molars and pre-molars also become prominent.

A particular type of malocclusion is prominent among the individuals buried in the lower levels of this state. Crowding leads to the anterior displacement of both the upper and lower canines and, as a consequence, they show much less wear than the other teeth.

Only one example of supernumerary teeth is present.. Burial 36b, Feature 25, exhibits four in the maxillary area, three of which are located in the right linguamolar area with the other lying opposite its fellows. All are malformed.

Burial 1, Feature 16, an adult female, shows great enlargement of the mental foramena which most closely resembles the condition of septicemia.

Burial 31f-1, Feature 25, exhibits polished grooves on the distal buccal corners of the upper second molars. Corresponding grooves are found on the anterior areas of the third molars. A small area of immature bone is located on the alveolar area below the nasal spine and the central incisors have been pushed in slightly. In addition, the type of malocclusion mentioned above is present in this individual with the right maxillary canine completely displaced so that it has erupted into the buccal area above the premolars. It also should be mentioned that the anterior area of the left mandibular cavity is at such an angle that the mandible could be partially dislocated at will.

Cranial Traits

An interesting, family-like trait is found in three individuals (Burial 2a, Feature 13, Burials 35a and 35b, Feature 25). This is a button-like extension of the occipital into the parietal area at the lambdoid suture, and is contiguous with the rest of the

occipital. The average measurements of this extension are 33mm. in the width and 23mm. in height.

Burial 2b, Feature 13, a middle-aged female, provides the only example of a complete metopic suture.

All adults show osteoporosis of the calverium to some degree, the area of highest incidence being around the frontal.

One case of cranial hyperostosis was found. In Burial 37a, Feature 25, a middle-aged female, the frontal and to a lesser extent, the parietals are affected.

Traumatic Lesions

Four specimens, Burial 2a, Feature 13, Burials 21a, 31f-1, and 35b, Feature 25, exhibit well demarcated, depressed, areas on the most exposed parts of the calverium. None of these areas is larger than a 25 cent piece and probably represents some past, minor, traumata.

Burial 1a, Feature 9, shows a calverial fracture that has been described previously (Freeman, accompanying paper).

Four examples of post-cranial fractures were found: Burial 2, Feature 9, an adult female, who shows the callus of an old fracture just above the distal end of the left humerus. Burial 3, Feature 10, an adult male, has the remains of an old green-stick fracture above the midshaft of the left tibia. Burial 23a, Feature 25, an adult male, exhibits a poorly-healed fracture of the right ulna. Burial 1, Feature 26, an adult male, has a partially-healed hip fracture involving the neck of the right femur. This led to inflammation and necrosis of the head of the femur and of the acetabulum.

Burial 12a, Feature 25, which has a projectile point imbedded in the third thoracic vertebra, has already been described (Freeman, accompanying paper).

Tumors

Three free tumors were recovered from the burial ground. Burial 1, Feature 3, has a large fibrous mass within the thoracic cavity. This mass was subjected to precipitin tests by Dr. Margery Gray of the University of Wisconsin Medical School. It yielded such a high reaction that there is no doubt of its human origin. Two small tumorous masses were later found with Burial 3, Feature 10, and Burial 37a, Feature 25, but their locations **in situ** are unknown.

Arthritis and Inflammatory Changes

Conditions of this nature were noted primarily in the zone of the vertebral column. Individuals most affected were Burial 1, Feature 1, Burial 1, Feature 2, and Burial 31f-1, 35a and 35b, Feature 25. Those changes noted most frequently are: (1) osteoarthritis, especially of the rib facets; (2) osteoporosis of the vertebral bodies; (3) bilateral laminal exostoses; and (4) ossification of the posterior longitudinal ligament. The greater number of the specimens enumerated above exhibited all of these conditions.

The metatarsals of Burial 29a, Feature 25, indicate a condition resembling generalized hypertrophic osteoarthropathy.

THE WISCONSIN FIELD ARCHAEOLOGY ACT OF 1965

Joan Freeman

New legislation governing the pursuance of field archaeolog on state lands has been incorporated in the Wisconsin Statutes of 1965 as Chapter 424, and is now in force. The new act repeals section 27.012 of the old statutes. The Wisconsin Field Archaeology Act of 1965 seeks to preserve objects and information valuable in understanding Wisconsin's historic and prehistoric Indian heritage.

Under the provisions of the new law, any person who wishes to conduct archaeological field investigations on state lands or waters is required first to secure a permit to do so. All permits must be approved by the Director of the State Historical Society of Wisconsin on recommendation of the State Archaeologist.

Persons wishing to secure permits for field archaelogy must first submit a completed application form. These forms may be obtained by written or telephone request made to the State Archaeologist, Dr. Joan Freeman, State Historical Society, 816 State Street, Madison, Wisconsin 53706. An alternative which may be followed is to print or type a copy of the application sheet which appears below. In cases where the applicant prepares his own form, care should be taken to supply all the information requested.

APPLICATION FOR PERMIT TO CONDUCT FIELD ARCHEOLOGY

Name _____

Address _____

_____
City State Zip Code

Date of Birth _____ Occupation _____

Type of field work reconnaissance _____ test and/or excavation_____

Location of intended work _____
Name of park, etc. County

Landowner or custodian * _____
Conservation Department, etc.

—Fill in for testing and/or excavation **only**—

Name of site_____ Section and ¼ Sec. occupied by site_____
Town _____ Range _____

Who is to receive custody of artifacts recovered? _____
name of person or institution

Period of field work: from_____to_____
(**Exact** dates must be given for testing and/or excavation)

Use the back of this form for a **brief** statement of the purpose of field work.

Letters of explanation may accompany this application when this seems advisable.

Approved_____
Joan E. Freeman
State Archeologist

DO NOT WRITE BELOW THIS LINE

— — — — — — — — — — — — — — —

PERMIT

Permission of Landowner _____ Date_____

_____
Leslie H. Fishel, Jr., Director
State Historical Society of Wisconsin

This permit is issued on the condition that the permittee submit, within one year of the expiration of this permit, a brief summary of the work herein described to the State Archeologist.

— — — — — — — — — — — — — — —

* In cases of private land ownership, the owner's written consent **must** accompany this application if the work involves testing and/or excavation.

It is necessary that applicants be specific about the type of field archaeology which they wish to undertake: Reconnaissance will include making site surveys on land or water and assembling collections. Excavation will encompass all digging, whether full-scale excavation or only test pits are involved.

In requesting a permit for reconnaissance, the applicant must specify the **general** area in which he desires to undertake the work, e. g. Wyalusing State Park. No exact work dates are required for this type of permit and only the beginning and ending months be specified. Reconnaissance permits will be issued for periods not exceeding six months.

Applications for permits to excavate must give the **exact** location of the site or sites where the work is to be done. That is, each site must be designated by site name (if any), town, range, section, and ¼ section. In addition, exact dates bracketing the work period must be given in the application.

The permission of a state agency having jurisdiction over a state land tract where it is desired to undertake field archaeology must be secured before approval of a permit is made. The applicant for a permit must supply the name of the agency controlling the land where he wishes to work so that the State Archaeologist can obtain that agency's permission for the applicant to undertake the work.

While it is not mandatory, the law does encourage individuals wishing to dig on privately owned land to first obtain a permit to do so. If such a permit is desired, the written consent of the landowner must accompany the application.

In cases where archaeologically valuable information is in danger of immediate destruction through demolition or construction work, emergency permits may be obtained by telephoning the Director of the State Historical Society, 262-3266) or the State Archaeologist (262-2704) in Madison (area code 608).

The law provides for a board of review to whom may be addressed appeals from the decisions of the Director of the State Historical Society concerning his actions in issuing or revoking permits. The names of the persons who will constitute this board will be published in the **Wisconsin Archeolo-**

gist as soon as each of the groups has chosen its representative.

This new legislation will in no way restrict field archaeology. It does, instead, establish clear and accessible channels through which permission may be obtained to work on state-owned land. Through providing the new position of State Archaeologist, the law allows for the establishment of a much needed clearing-house for archaeological information. It is anticipated that the clearing-house operation will considerably enhance the scope and value of the records now being kept at the Milwaukee Public Museum and at the State Historical Society. This upgrading of the archaeological records of site locations and cultural affiliations can, however, be accomplished only if workers on state lands report their findings to the State Archaeologist. It is for this reason that permits are issued on the condition that the permitee submit a brief report of his findings to the State Archaeologist within one year of the date of expiration of the permit.

STATE OF WISCONSIN

Assembly Bill 565 Effective Dec. 9, 1965

Chapter 424, Laws of 1965

AN ACT to repeal and recreate 27.012 of the statutes, relating to field archaeology and providing penalties.

The people of the state of Wisconsin, represented in senate and assembly, do enact as follows:

Section 1. 27.012 of the statutes is repealed and recreated to read:

27.012 FIELD ARCHAEOLOGY. The state of Wisconsin reserves to itself the exclusive right and privilege of field archaeology on state sites, in order to protect and preserve archaeological and scientific information, matter and objects. It is a declaration of legislative intent that persons practicing field archaeology on privately owned land are encouraged to pursue their field archaeology in accordance with this section, and that the looting of all archaeological remains be strongly discouraged. Persons having knowledge of the location of archaeological sites are encouraged to communicate such information to the state archaeologist. This section is not intended to burden persons who wish to use state property for recreational and other lawful purposes or to unnecessarily restrict the use of state property.

(1) Definitions. As used in this section:

(a) "Archaeological methods" means scientific procedures used in field archaeology by recognized professional authorities on archaeology.

(b) "Data" means field notes, photographs, maps and other records relating to field archaeology.

(c) "Director" means the director of the historical society.

(d) "Field archaeology" means the study of the traces of human culture at any state-owned land or water site by means of surveying, digging, sampling, excavating or removing objects.

(e) "Historical society" means the state historical society of Wisconsin.

(f) "Object" means a man-made article, implement or other item of archaeological interest.

(g) "Scientific institutions" means museums, historical societies, foundations for archaeological study, state agencies and scholarly groups with professional standing and physical facilities for the display, study and preservation of objects of archaeological interest.

(h) "State site" or "state archaeological site" means a land or water area, owned by this state, where there are objects or other evidence of archaeological interest. This term includes all aboriginal mounds and earthworks, ancient burial grounds, prehistoric and historical ruins, Indian mounds and objects and other archaeological and historical features on state land.

(2) Unlicensed field archaeology prohibited. No person other than the state archaeologist and individuals licensed by the director shall engage in any field archaeology on any state site.

(3) State Archaeologist. (a) Appointment. The state arch-archaeologist shall be a professional archaeologist residing in this state and shall be appointed by the director.

(b) **Duties and powers of state archaeologist.** The state archaeologist shall:

1. Sponsor, engage in and direct fundamental research into the archaeology of this state and encourage and co-ordinate archaeological research and investigation undertaken within the state.

2. Co-operate with other agencies of the state which have authority in areas where sites are located, or which have the responsibility for marking sites or arranging for their being viewed by the public.

3. Encourage the preservation of archaeogical sites located on privately owned property.

4. Protect objects of archaeological significance discovered by field archaeology at state sites or discovered during the course of any public construction or demolition work on state sites, and encourage the protection of such objects discovered during the course of any other construction or demolition work.

5. Co-operate with the historical society, public and private institutions of higher education in this state, and other custodians to preserve objects of archaeological significance, together with the data relating thereto.

6. Encourage the dissemination of archaeological facts through the publication of reports of archaeological research conducted within the state.

7. Approve permits for qualified persons to engage in field archaeology as provided in sub. (4) and to otherwise carry out and enforce this section.

(4) **Permits.** (a) The director, acting as an agent of this state, may issue upon such terms and conditions, including restriction to a specific state site on land, as he designates, to a qualified natural person approved by the state archaeologist, a permit to engage in field archaeology on state sites. If a state site or the area described in an application is under the jurisdiction of any other agency of the state of if the field archaeology to be licensed interferes with a project of any other state agency, the director shall first obtain the approval of such agency. No agency shall withhold approval without good cause. No fees shall be charged for processing applications, for permits or for renewal of permits.

(b) If a site is located on privately owned land, persons wishing to dig or excavate at such a site are strongly encouraged to secure a permit to do so. The applicant for a permit must submit the written consent of the owner.

(c) The director may waive the provisions of sub. (3) (a) 7 in an emergency in which objects of archaeological interest are found in the course of construction or demolition work, or in other situations in which time is of the essence to save objects or gather data.

(d) The director, upon the recommendation of the state archaeologist or the agency administering the state site, may revoke or suspend a permit because of the improper conduct of the permittee, the use of improper or substandard archaeological methods or for other good cause.

(5) Ownership, custody and use of objects and data. The state reserves to itself the title to all objects found and data gathered in field archaeology on state sites. Although a permit may name a custodian other than the historical so-

ciety, title to the objects and data discovered at state sites is reserved to the historical society as trustee for the state. Physical possession of such objects shall revert to the state if such custodian ceases to exist, or if the director, on the recommendation of the state archaeologist, finds that the custodian is not properly caring for them or keeping them conveniently available for study by students of archaeology.

(6) **Co-operation of state agencies.** All state agencies whose activities may be affected under this section shall cooperate with the historical society and the state archaeologist to carry out this section.

(7) Penalties. (a) Intentional violations. Whoever intentionally violates sub. (2), or intentionally defaces, injures, destroys, displaces or removes and archaeological object or data belonging to the state, or intentionally interferes with evidence or work on any state site for which a permit has been issued under this section or intentionally violates any other provisions of this section may be fined not more than $100 or imprisoned not more than 90 days or both.

(b) **Other penalties.** The director may refuse to issue or renew, or may suspend or revoke the permit of any person who has violated any provision of this section. The director may refuse to name a school or scientific institution as the custodian of objects or data under any permit or agreement, if that school or scientific institution has failed in its duty to care for and preserve objects or data belonging to the state or has failed to make such objects or data conveniently available to students of archaeology.

(8) **Review board.** Appeals from decisions of the director shall be made to a review board composed of 3 persons: a member of the Wisconsin archaeological society, a member of the Wisconsin archeological survey, and a member of the board of curators of the historical society. Each board member shall be chosen by the organization which he represents and shall serve without compensation. The review board shall submit its recommendations on all appeals to the board of curators of the historical society for final decision.

9 **Short title.** This section may be cited as the "Wisconsin field archaeology act."

Section 2. The provisions of this act shall not be retroactive.

MR. LELAND COOPER . . . 32nd RECIPIENT OF THE LAPHAM RESEARCH MEDAL

On May 16, 1966 Mr. Leland Rogers Cooper was awarded the Lapham Research Medal by The Wisconsin Archeological Society. This is the Society's highest honor given to those judged to have made outstanding contributions to the knowledge of the archeology of Wisconsin.

Mr. Cooper was born in Boscobel, Wisconsin in 1899. His higher education was at the University of Wisconsin where he received a B. A. degree in 1936, the University of Minnesota for an M. A. degree, plus further study at Stanford University and the University of London. He is at present an

LELAND COOPER

Associate Professor of Sociology

Hamline University

Associate Professor of Sociology and Anthropology at Hamline University, St. Paul, a position he has occupied since 1944, and Curator of the Hamline University Museum since 1952. A long time member of the Wisconsin Archeological Society, he has also served as President of the Minnesota Archeological Society from 1945-46.

Of his many archeological excavations since 1929, two are perhaps best known to Wisconsinites. His excavations and partial restoration of the First Fort Crawford at Prairie du Chien, from 1937 to 1941, was an outstanding job, and his excavation of the Red Cedar Hopewell mounds in Barron County in 1931 yielded the unique and famous clay funerary masks. His more recent work in Minnesota is reflected in the following list of projects and publications.

We welcome with pride and pleasure the entrance of Mr. Leland Cooper into the select circle of Lapham Medalists.

RESEARCH PROJECTS AND GRANTS

Excavation of Mound site, Rice Lake, Wisconsin, 1929.

Excavation village site, Clam Lake, Burnett County, Wisconsin, National Research Council grant with the University of Wisconsin and the Milwaukee Public Museum, 1935.

Director of excavations and partial restoration of the First Fort Crawford, Prairie du Chien, Wisconsin, 1937 - 1941 and Director of the Museum Prairie du Chiens, 1939 - 1941.

Excavation of mound site at Sandy Lake, Aitkin County, Minnesota, 1943.

Grant of time and support by Hamline University for a cultural study of the Nett Lake Indian Village, 1947. Basis for M. A. thesis.

Grant from Mr. Frank Hudachek of Chicago, Illinois for research on aboriginal and historical artifacts of the Canadian Border Country, 1951.

Excavation of a Late Woodland site at Mounds Park, Rice Lake, Wisconsin. Financed by the City of Rice Lake.

Louis W. and Maude Hill Family Foundation Grant for Russian Area Study Research 1953 and 1956.

Grant by the State Historical Society of Wisconsin for rehabilitation of materials in the Prairie du Chien Museum and further research on Fort Crawford, 1953-54.

Excavation of the Ranilius Site at Spring Lake, Dakota County, Minnesota under grant by the Louis W. and Maude Hill Foundation made to the St. Paul Institute Science Museum, 1955.

National Science Foundation Grant for excavations of Indian Village sites and mounds on Madeline Island, Ashland County, Rice Lake,

Barron County and the Altern Site, Burnett County, all in Wisconsin, 1961 - 62.

National Science Foundation Institutional Grant for preparations leading to publication of data taken from previous site excavations, 1964 - 65.

Grant from the Minnesota State Historical Society for excavation of the Thomas Connor Fur Trading Post, Pine City, Pine County, Minnesota, 1963 and 1964.

Director of Student Training Program and excavations at Mille Lacs, Kathio State Park, Onamia, Minnesota sponsored by the University of Minnesota and the Minnesota Outdoor Recreation and Resources Commission, 1965-66.

PUBLICATIONS RELATING TO GREAT LAKES ARCHEOLOGY

The Red Cedar Variant of the Wisconsin Hopewell Culture, Vol. 16, No. 2, December, 1933, Monograph Series of the Public Museum of the City of Milwaukee.

Indian Mounds Park Archeological Site, Rice Lake, Wisconsin, Science Bulletin No. 6, The Science Museum of the St. Paul Institute, St. Paul, Minnesota.

"Sandy Lake Ware and Its Distribution," Leland R. Cooper and Elden Johnson, **American Antiquity,** Vol. 29, No. 4, April 1964.

"A Preliminary Report on the Excavation of Two Middle Woodland Mounds in Northwestern Wisconsin," **Journal of the Minnesota Academy of Science,** Vol. 32, No. 1, 1964.

Two Late Middle Woodland Mounds in Northwestern Wisconsin and Related Cultural Manifestations in Minnesota. Bulletin Series of The Science Museum of the St. Paul Institute, St. Paul, Minnesota, 1966. (In press.)

Preliminary Report, Archeological Survey and Excavation at Mille Lacs - Kathio State Park, 1965, Department of Anthropology, University of Minnesota, Report Number 1, Leland R. Cooper.

NOTICE

As of July 1, 1966, the price of back issues of the **Wisconsin Archeologist** will be $2.00, except for a few larger issues at $3.00.

LAPHAM RESEARCH MEDAL RECIPIENTS

Compiled by Wayne J. Hazlett

The Lapham Research Medal has been awarded by the Wisconsin Archeological Society since 1926, to those members who have made significant contributions to the field of Wisconsin Archeology.

March 15, 1926	No. 1	George A. West
	2	Charles E. Brown
	3	Dr. George L. Collie
	4	Dr. S. A. Barrett
	5	Harry E. Cole
	6	John P. Schumacher
	7	George R. Fox
	8	Dr. Alphonse Gerend
	9	Halvor L. Skavlem
March 19, 1928	10	Huron H. Smith
May 9, 1930	11	Dr. Ralph Linton
	12	Dr. Carl E. Guthe
	13	Joseph Ringeisen, Jr.
	14	W. C. McKern
March 18, 1936	15	Dr. Louise Phelps Kellogg
	16	Charles G. Schoewe
	17	Towne L. Miller
	18	Arthur P. Kannenberg
April 15, 1946	19	Prof. T. M. N. Lewis
	20	Dr. Paul H. Nesbitt
	21	Dr. Herbert W. Kuhm
	22	Dr. L. S. Buttles
	23	Dr. A. K. Fisher
June 19, 1950	24	Kermit Freckmann
June 15, 1953	26	Dr. Warren L. Wittry
	26	Robert L. Hall
	27.	Dr. Robert E. Ritzenthaler
June 27, 1955	28	Dr. David A. Baerreis
	29	Dr. Edgar G. Bruder
May 18, 1959	30	Dr. Arthur Niehoff
October 16, 1960	31	Dr. Chandler W. Rowe
May 16, 1966	32	Leland Cooper

THE BOOKSHELF

By

David A. Baerreis

and

Guest Reviewers

The parallel to our own journal for the neighboring state of Michigan is THE MICHIGAN ARCHAEOLOGIST, published quarterly by the Michigan Archaeological Society and edited by Dr. James E. Fitting of The University of Michigan. Subscription is by membership in the Society, the cost of regular membership being $3.00 per year. Membership gives the further privilege of purchasing the publications of the Museum of Anthropology of the University of Michigan at a 25% discount. Those interested in subscribing may write to the Secretary, Mr. Donald R. Hays, 2723 Buckingham, Birmingham, Michigan.

The occasion for calling attention to this useful journal that contains much of interest to the student of Wisconsin archaeology, is to review Volume 11, Numbers 3 - 4, a special issue (price $2.00) containing a series of papers in honor of Emerson F. Greenman. Dr. Greenman, who retired from the staff of the University of Michigan in 1964, was founder and for ten years editor of THE MICHIGAN ARCHAEOLOGIST. The Introduction (pp. 83-84) by Eloise Kerlin Jelinek gives a brief biographical sketch of this pioneer worker in Midwestern archaeology whose first excavations in Michigan were conducted in 1925. The Introduction is followed by nine papers on various aspects of New World archaeology by colleagues and students of Dr. Greenman. The number is concluded by his bibliography.

The papers in the volume have been arranged chronologically in terms of the horizons to which they pertain. They open with a brief discussion by Arthur J. Jelinek of the Upper Paleolithic revolution of the Old World in relation to the peopling of the New World (pp. 85-88). Jelinek advances the thesis

that it was with the Upper Paleolithic cultures that man developed cultural devices that allowed him to survive under a wide range of climatic conditions. This, in conjunction with a consideration of the situation at the Bering land bridge makes it likely that the arrival of **Homo sapiens** in the New World was probably post 25,000 B. C. and almost certainly post 30,000. If suggestions of earlier cultural remains in the New World such as those advocated by Alex D. Krieger are valid, Jelinek points out these are likely associated with varieties of non-sapiens hominids.

The following paper by William B. Roosa, "Some Great Lakes Fluted Point Types," (pp. 89-102) attempts to distinguish several types of fluted points found in the Great Lakes area. Some of the methodical comments made by Roosa are well worth serious consideration by those working with problems of projectile point typology in our region. The heart of this discussion is to be found in the following paragraph, of sufficient importance to warrant quotation:

"Once the types in an area have been described from a study of single component type site samples it becomes practical to attempt to identify isolated finds as to type. Attempts to discern types from large heterogeneous collections without first having a good idea of what types are present in the area from a study of type site assemblages may result in setting up arbitrary classes with little cultural significance. This pitfall is minimized by the use of the type site sample concept." (p. 89)

The article is an important one and includes a discussion of some Wisconsin points. One wishes that in keeping with the methodological spirit of the article, larger series of projectile points were used to illustrate the types.

James E. Fitting follows with "Observations on Paleo-Indian Adaptive and Settlement Patterns" (pp. 103-109). While dealing with the same horizon, the author is concerned with the relatively little explored area of settlement pattern and social organization during this early period. Included are new data from some of the recent excavations in Michigan which add tremendously to our fund of information on the patterns of life of these peoples. The section on early material is essentially concluded with a reprinting of the article by Elman

R. Service, "Lithic Patina as an Age Criterion" (pp. 110-114) which originally appeared in Volume 27 of the Papers of the Michigan Academy of Science, Arts and Letters.

The longest paper in the volume (pp. 115-155) is by James B. Griffin, "Hopewell and the Dark Black Glass." With the typical, thorough scholarship we have come to expect of Dr. Griffin, this comprehensive survey of references to obsidian and its distribution in archaeological sites in the central Middle West will be an essential starting point for scholars concerned with this unusual lithic material that played such an important role in the Hopewell cultures. Griffin concludes that obsidian in the Middle West is limited almost entirely to Hopewellian sites and that the most likely time of the introduction of obsidian is about A. D. 100 to 200. The most reasonable source, he suggests, is the Rocky Mountain area and in view of the Hopewell employment of Knife River flint from North Dakota it is reasonable to look toward Yellowstone Park.

Wisconsin readers will be particularly interested in the discussion by Ronald J. Mason, "Wisconsin Middle Woodland Toggle Head Harpoons" (pp. 156-164) which elaborates on the problems posed by these distinctive bone implements previously described in the pages of our journal. The article following, by George I. Quimby, "An Indian Earthwork in Muskegon County, Michigan" (pp. 165-169) describes test excavations in a circular enclosure, probably to be assigned to the Late Woodland Period. Volney H. Jones contributes an article on "The Bark of the Bittersweet Vine as an Emergency Food among the Indians of the Western Great Lakes Region" (pp. 170-180) which is largely based on ethnobotanical information from Wisconsin. The final article by Robert E. Ackerman, "Art or Magic: The Incised Pebbles from Southern Alaska" (pp. 181-188) is the only one which takes us some distance from local problems. Clearly the volume as a whole contains much of direct importance to Wisconsin archaeology, as do other issues of the journal. It is well worth our support through subscriptions.

David A. Baerreis,
University of Wisconsin

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EARLY SALVAGE EXCAVATIONS IN THE MADISON AREA, DANE COUNTY, WISCONSIN

David A. Baerreis

The records of mound distribution, so painstakingly compiled by Charles E. Brown, indicate that over a thousand mounds were once to be found near the shores of the four lakes of the Madison area. Perhaps not more than a fifth of these survive, but what is more distressing is that this loss of the prehistoric sepulchral monuments and, of course, the less conspicuous village sites has taken place with very little recovery of information that would enable us to reconstruct the prehistory of the region. It would be a facile explanation to suggest that the early occupants of the city simply were not interested in antiquities and through this lack of interest irretrievable bits of information that would serve to reconstruct the past history of the Madison area are now gone. While there is an element of truth in this, it is by no means the complete story. Residents of the area have reported sites about to be destroyed to the appropriate authorities and the best qualified persons available have conducted excavations in many of the mounds and some of the village sites. The real explanation of why we know so little about the prehistory of the Madison area is the inherent difficulty in making archaeological reconstructions from the kind of evidence available. So far as the burial mounds are concerned, the soil characteristics are such that frequently even the skeletal material has completely decomposed. Where the human bones are preserved, very rarely is a scrap of pottery or a stone implement found that would serve to establish the cultural affiliation of the group making the burial. The most fruitful strategy for reconstructing the sequence of occupation in the region would perhaps have been to concentrate upon the camp and village sites, but these appear to have been thin and produced relatively little material. The bulk of the occupation was by In-

dians of the Woodland tradition and only recently have we begun to appreciate some of the subtle differences that mark developmental stages in the tradition. It would seem that the bulk of the sites in the Madison area were destroyed before the field of archaeology had developed sufficient precision in its techniques and accumulated an adequate body of data to cope with the kinds of problems the area presented. This being the case, it is imperative that the vestiges of early occupation that remain be studied as thoroughly as possible, and that the materials resulting from earlier salvage work be utilized as fully as possible.

It is the purpose of this brief account to place on record a salvage excavation at the Burton site conducted in 1951 and to utilize some of the notes of Charles E. Brown to discuss even earlier excavations in this same region and on the University grounds. The accompanying paper by Charles F. Merbs explores what may be learned through a meticulous examination of the human skeletal material recovered in these excavations. The initial search through the records of the Wisconsin State Historical Society and the classification of the pottery and stone implements was made possible by a grant from the Graduate Research Committee of the University of Wisconsin (50:70). Thus the pottery and projectile point types were not defined solely on the basis of the limited number incorporated in this report, but were based on a somewhat larger series. It may also be noted that Mr. Brown had early announced that it was his intention to collaborate with Mr. A. B. Stout in an archaeological history of the Four Lakes region about Madison (Brown 1912:8). Perhaps it was this unfinished project which resulted in the accumulation of the unpublished notes among Mr. Brown's papers for he normally was most conscientious about publishing the results of his work.

The Burton Site

The Burton Site is located in Mendota Beach on the southwestern corner of Lake Mendota in the City of Madison, a region which has yielded a number of burials under somewhat similar circumstances. The most recent burial reported in 1951 was discovered in the course of excavating a trench in the yard of the home of Mr. Frank Burton. Through his

courtesy we were notified of the discovery and permitted to excavate the burial. It is this area which we designated the Burton site, located a few hundred feet from the shore of the lake in the NE ¼ of the NW ¼ of Section 20 immediately to the south of the residence then occupied by Mr. Burton on Lake Mendota Drive. The area is reported to have originally had a small conical mound, approximately three feet in height though no trace of this mound remained. The burial was a multiple secondary burial consisting of at least ten individuals. It rested directly upon a light clay subsoil in an area 52 by 32 inches in dimensons, with a vertical thickness of 9 inches. Evidently the dark topsoil had been cleared from the area prior to the deposition of the bones and this topsoil was subsequently used to cover the burials and presumably to form a mound fill. The bones were placed in two distinct masses. At the north end of the burial was a bundle of bones of a single individual. This was separated by about three inches from an oval mass of the remaining bones. The skeletons were not only clearly disarticulated but many of the bones had been lost or discarded prior to burial, only a few of the ribs and vertebrae being present. The burial practice suggested would seem to involve the original exposure of the

Figure 1. Bundle burial at the Burton Site (Da4) from West.

bodies in a tree or on a scaffold and subsequent burial after the flesh had largely decomposed. No artifacts of any kind were found in the burial area, illustrated in Figure 1.

Another burial previously reported to Mr. Brown, was discovered on this same lot by Mr. Burton during the construction of an addition to his house. It consisted of a bundle burial resting at a depth of about 14 inches below the surface of the ground. The skull lay on its side with a number of long bones extending beneath and beyond it. Again no vertebrae or portions of the pelvis were present. About two feet south of the bundle burial were a few small flakes of mica and small pieces of red ochre.

Additional burials in the Mendota Beach area were reported at an earlier time. Mr. Brown's notes contain a report from Mr. David Atwood concerning five Indian burials that were disturbed in excavating the foundation of a barn on land belonging to Mr. Magnus Swenson at Mendota Beach in 1922. The burials were apparently extended at full length and lying side by side at a depth of about three feet below the surface, with heads oriented to the north. They were on a knoll on the grounds. The skulls, he was informed, all showed injuries. Lying on the spinal column of one individual was a flint projectile point and accompanying one of the burials was a perforated bear's tooth ornament.

Two additional burials were encountered in road construction work in this area in 1932. One was a shallow burial, about 18 inches below the surface, and also extended at full length. The second burial, about 300 feet south of the first, was a flexed burial at a depth of about 3 feet feet below the surface. No grave goods were found with either individual.

In this complex of burials, skeletal material has been preserved only from the most recent excavation at the Burton site and that material is included in Mr. Merb's analysis. The diversity of burial position and types of artifacts associated with the other burials suggest that a considerable time period might have been involved in the use of the location by prehistoric peoples. The extended burials, particularly in conjunction with a perforated bear's tooth, suggests the possibility of Hopewellian influence or the presence of actual Hopewell components. This is not unreasonable considering the fact

that similar Hopewell influence is also to be seen at the Outlet site in this area. The secondary burials at the Burton site, on the other hand, seem more appropriately assigned to the Effigy Mound culture though more work is needed to clarify the developmental stages in this complex and to identify related cultural groups. The preservation of the entire group of skeletal material might have permitted some conclusions as to the homogeneity of the series. Some comparison, however, can be made with skeletal materials recovered from other excavations on the University grounds in Madison and the context of this material is described on the following pages.

The various mounds and mound groups located on the University grounds were described by Charles E. Brown in two papers (Brown 1912, 1914). Additional information in regard to the contents of these and other mounds of the area has accumulated since the publication of the papers cited through the activities of a State Historical Museum WPA project which, in 1937 and 1938, conducted a series of excavations under the supervision of Mr. Brown in connection with restoration work on mounds. Further information was obtained in salvage operations when a few mounds were destroyed by new building activity on the University grounds.

Willow Drive Mounds

The three mounds which composed this group were described by Charles E. Brown under the names "University Group No. 3" (Brown 1912: 9-10) and "Creek Group" (Brown 1914: 386-387). In a later pamphlet on campus landmarks they are designated the "Willow Drive Mounds" (Brown 1931: 11), the name retained in this report. The mound group was located on the south edge of the present Willow Drive immediately to the east of the small concrete bridge which spans the creek near the University beach. Of the three mounds, only the bird effigy survives at present, its location being marked by a bronze plaque provided by the University Board of Regents in 1922.

The bird effigy was excavated under the supervision of Mr. Brown in 1935 at which time he recorded its dimensions as follows: length of body (over-all) 75 feet; greatest width 23 feet; height 2.5 to 4 feet; and wingspread 90 feet. Considering the fine appearance of this bird effigy at the present

time, it is worth recalling that the bird effigy as described by Mr. Brown in 1912 (pp. 9-10 and Plate 2) was a badly mutilated form with only a single wing surviving. Indeed, it seemed uncertain that it was actually a bird effigy and the dimensions as recorded at that time are substantially different from those recorded at the time of excavation. Attention has been called to these points to indicate the difficulty of obtaining reliable form descriptions of effigy mounds and accurate statements as to their precise dimensions and proportions. Unless the state of preservation is exceptional, the margins of the mounds blend imperceptibly with the surrounding terrain and the interpretations of form can readily be biased by such natural phenomena as tree falls or by mound restoration when no records of such work are preserved.

The excavation of the bird effigy under the supervision of Mr. Brown revealed that it was constructed of a sandy loam at the head and of loam and clay in the body area. The differentiation in mound fill may simply reflect the relatively recent restoration work cited above. Because of a desire to preserve a series of spruce trees planted down the length of the mound (fortunately these have since been removed), the excavation consisted of four pits of varying dimensions placed between the trees. The earth in the pits was solidly compacted and no signs of stratification or of basket loads of earth could be detected. The pits contained hearthstones, flint chips, pieces of charcoal, flint "blanks", projectile points, sherds and broken hammer and smoothing stones. These were regarded as having been brought to the mound in the soil used in the construction of the mound.

A single human burial (UW-1) was found in the excavation, located in the center of the body near the intersection with the two wings. The burial is described as a flexed or folded skeleton lying with its head to the southwest. The skull is recorded as having been in a good state of preservation but the arm, leg and other bones in only a fair condition. In view of the fact that a foot and arm, a part of the pelvis and most of the ribs were missing, it was also suggested that the burial represented a bone reburial from some former position. If this is the case, then it is unlikely that the burial was also

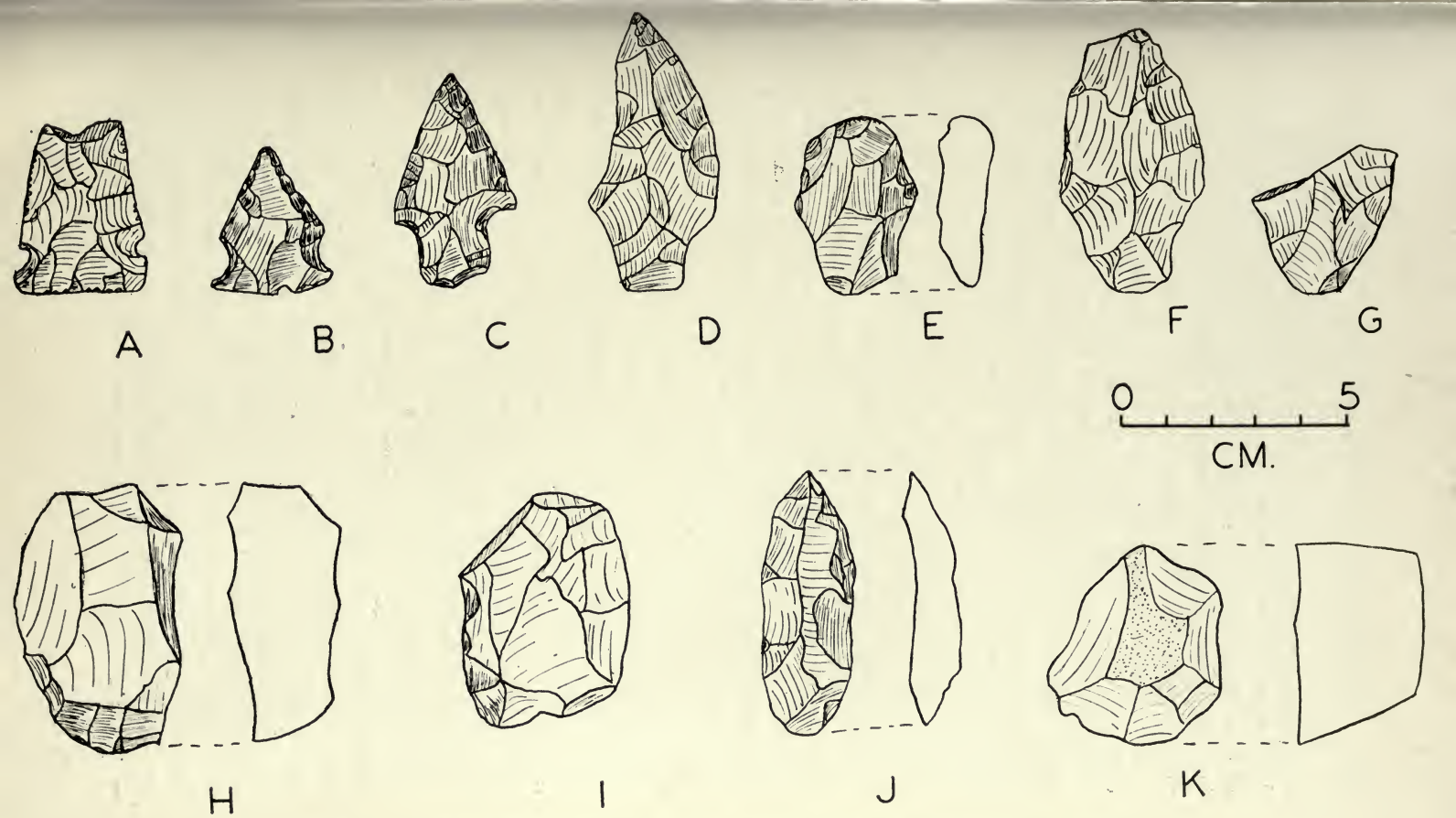

Figure 2. Chipped stone implements from the Bird Effigy, Willow Drive Group.

a primary, flexed burial as the first statement would indicate. Within a few inches of the cranium was part of the mandible of a coyote, **Canis latrans** say, the bone identification having been made by Professor George Wagner of the University of Wisconsin for Mr. Brown.

The material preserved from the excavations in the bird effigy mound consists of a series of flint chips, fragments of crudely flaked implements and cores, as well as nine implements of chipped stone and one intact core. None of the sherds mentioned in the original field notes appear to have been included in the collections of the Museum of the State Historical Society.

The projectile points found in the mound fill include the following types: one each of **Madison Side Notched** and **Monona Stemmed** and five **Waubesa Contracting Stem.** The single point of **Madison Side Notched** (Figure 2, A) is manufactured from a mottled grey chert and has a portion of the blade missing. Size attributes which could be recorded for this and other implements from the bird effigy are presented in Table 1. The type **Monona Stemmed** is also represented by a single point, in this instance manufactured from a white chert. The base is markedly convex (Figure 2, B) and the sides of the blade are straight, forming a blade that has the shape of an equilateral triangle. The blade suggests that an originally larger implement was broken and retouched to this form. In its present condition the point appears to have been used as a reamer. The tip is blunt and has been worn smooth through a rotary grinding activity. While five points are placed in the type **Waubesa Contracting Stem,** only two of these are finished projectile points (Figure 2, C-D). The remaining three artifacts are crudely flaked specimens which do have a contracting stem of the form characteristic of the type. It is possible that they represent unfinished points or perhaps points that were broken in the process of manufacture and then discarded. One of the crudely worked specimens (Figure 2, E), however, has a blunt and battered tip and appears to have been used as a bunt. The two finished specimens are manufactured from chert, one a banded grey and cream colored variety and the other a mottled brown and cream variety. The larger specimen is asymmetrical in that one side of the

blade is markedly convex while the other side is recurved. This marked asymmetry may be due to the reworking of a broken edge. The smaller specimen (Figure 2, C) is also slightly asymmetrical in blade form in that one side is nearly straight while the other is slightly convex. The three unfinished artifacts placed in this type are manufactured from chert of a pink and mottled grey and white color.

Three of the remaining specimens are classified as scrapers. One is a thick, crudely flaked, end scraper of Type C, a variety in which the ventral or plane surface is formed by multiple primary flake scars produced by percussion flaking. The implement was perhaps produced from a fragment of a larger core. No striking platform is evident and the sides of the implement show a contact line between the grey flint and a sandy limestone, the presence of this latter, intractible material for flaking techniques, adding to the crudeness in appearance. The specimen is illustrated in Figure 2, H. Two implements are classified as side scrapers. One (Figure 2, I) is manufactured from the banded white and salmon colored flint of local origin. It is roughly ovate in outline and bears only slight retouching along one edge and portions of the end to make it suitable for use as a scraper. The implement, like the preceding end scraper, appears to follow no standardized plan and represents the modification of scrap flakes for scraping purposes. The second implement classified as a side scraper does not conform in its shape and size to common implements in this category. It is relatively slender, tapering to

TABLE 1. DIMENSIONS OF IMPLEMENTS (IN MM.) FROM BIRD EFFIGY MOUND

Type	Illus.	Length	Width	Th.
Madison Side Notched	2 A	--	30	8
Monona Stemmed	2 B	33	29	7
Waubesa Contracting Stem	2 C	48	28	9
Waubesa Contracting Stem	2 F	--	33	12
Waubesa Contracting Stem	2 D	63	29	9
Waubesa Contracting Stem	2 G	--	--	11
Waubesa Contracting Stem, Bunt	2 E	40	27	11
Type C End Scraper	2 H	61	39	23
Side Scraper	2 I	54	38	16
Side Scraper	2 J	59	21	11
Core	2 K	47	42	29

a blunt point at both ends. This might suggest a piercing function but the implement is also planoconvex in cross section with a marked keel along one face so that the long edges have relatively steep retouching suggestive of a scraper. Perhaps it constitutes a side scraper form that was mounted in some sort of handle. It is manufactured from a mottled grey and white chert and is illustrated in Figure 2, J.

The remaining specimen is a small core of the banded salmon and white flint. It is possible that it could have been used as a rough scraping implement (Figure 2, K).

It will be recalled from the original map of the University Creek group that two additional mounds of a tapered linear form accompanied the bird effigy. The long axis of the two linear mounds roughly prolong a line drawn through the body of the bird effigy. Both of the linear mounds are shown with a lateral bulge at the broad end that give them a club-shaped form while the longer of the two mounds has an additional bulge near the midpoint of the long axis on the opposite side from the bulge at the end. The linear mound closest to the bird effigy is proportionately short and broad (66 feet long and 33 feet in maximum width at the bulging end). The other linear mound is indicated as being 143 feet in length and 18 feet in maximum width at the bulging end. Both of the linear mounds were excavated in 1937 but the notes on the excavations do not clearly specify which of the two mounds is involved by a sketch (reproduced as Figure 3) on which the relative position of the features encountered is indicated. Although the outline of the mounds does not conform precisely to the shape of either of the two linear mounds as indicated on the original map, the bulge is indicated as being on the right side of the broad end of the mound. This placement is in agreement with only the longer of the two tapering mounds, designated as Mound No. 3 by Brown (1914: Figure 3). However the compass orientations given in conjunction with the excavations (and on the sketch map) indicate the narrow end is to the North which is only in agreement with the smaller of the two tapering mounds, or Mound No. 2. The general proportions of the mound are also more in keeping with Mound No. 2. Since the determination of the mound outline of an eroded structure is a very subjective matter, we

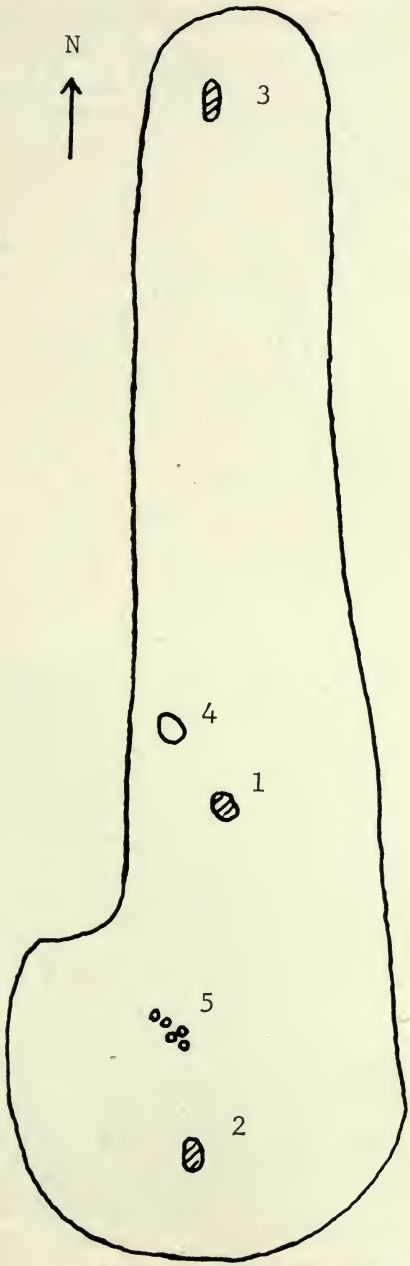

Figure 3. Sketch map of Linear Mound No. 2 in the Willow Drive Mounds showing position of excavated features.

have assumed these notes refer to the smaller mound (No. 2), immediately adjacent to the bird effigy, and therefore proceed with an account of the excavations in this mound first. That this identification is the proper one is further supported by a penciled modification of the 1914 map in Mr. Brown's files which shifts the bulge to the opposite side. When this mound was examined by the writer prior to its destruction it had a much vaguer oval form with no pronounced bulge, but its shape may well have been obscured by excavations.

The first feature encountered in Mound No. 2 consisted of two leg bones lying in close proximity, no other bones being present in association with them. Their position is indicated by No. 1 on the mound diagram (Figure 3). A few inches below these bones a primary, fully flexed burial was found. A photograph of this burial taken by the Bureau of Visual Instruction of the University (also responsible for other photographs of Mr. Brown's work) is reproduced as Figure 4. It is evident that the individual is resting on his right side with the legs tightly folded in front of the body. It is stated that the burial rested on and just beneath the base of the mound at a depth of 3.75 feet beneath its top, and placed 10 feet east of the western edge of the mound. A small corner-notched flint projectile point rested on the rib bones of the chest of this skeleton and the outline of the point is also reproduced in Figure 4 from the sketch accompanying the notes since it was not available for inspection. The notes also mention that a small sherd of dark brown clay ornament with parallel lines of twisted-cord impressions was found near the burial. The description would appear to indicate a sherd of the type **Madison Cord Impressed** but it too was not available for inspection.

A few feet northwest of Burial 1 (No. 4 on mound diagram) a large boulder was encountered at and just below the base of the mound. It was 3.75 feet long and 3 feet wide at its widest part. Dr. E. F. Bean, then State Geologist, indicated it was a "granite with a high percentage of quartz." This glacial rock had very likely always been where it was found and the mound erected over it. A group of seven boulders of large and small sizes arranged in a line was unearthed 5 feet north of the south end of the mound and 15 feet east of

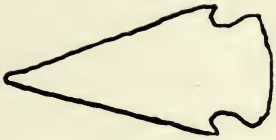

Figure 4. Burial 1 in Linear Mound No. 2 of the Willow Drive Mounds with sketch of accompanying projectile point.

the western edge (No. 5 on mound diagram). Since some of these showed rather freshly broken surfaces, it was thought they had very likely been placed at this point during some recent excavations at this place.

A second flexed burial was found at the location indicated by No. 2 on the mound diagram. The arms of the individual are described as having been folded on its chest and the skull faced the west. The bones are stated to have been in a better state of preservation than those of Burial 1. This burial rested about 1.5 feet west of the center line of the mound and was four feet below the mound surface.

What is described as the remains of two skeletons, both intrusive bone reburials, were uncovered near the north end of the mound and only about one foot below the surface (see No. 3 on mound diagram). The burial measured 3.5 feet by 1.5 feet in dimensions and was located 8.5 feet from the extremity of the mound. The burial is described in the notes as a bundle of human bones with a skull at either end but inspection of the photograph of this burial (Figure 5) indicates quite clearly that many bones are in their normal anatomical order. The one burial, at least, appears to be a very tightly flexed burial interred on the right side. The second individual

Figure 5. Burial in Linear Mound No. 2 of the Willow Drive Mounds.

may well represent a bundle reburial but this is impossible to determine from the photograph. It is indicated that the mandible of the north skull (on the right of the photograph) lay about 8 inches northeast of the skull. Near the east side of the south skull were scattered flint chips and a rim sherd of brown clay whose ornamentation to judge from a sketch accompanying the notes would seem to consist of cord-wrapped rod impressions. These are placed diagonally (leaning to the right) on the outer edge of the lip and two horizontal rows of impressions are spaced about a centimeter apart below the short lip impressions.

The second linear mound (Mound No. 3) is reported as being of about the same height as the other linear mound and like it constructed of a clay soil. As in the case of the other two mounds of this group, the presence of scattered sherds and flint chips indicated that at least some of the earth used in its construction had been obtained from a former village site. Excavation was begun by digging a broad trench from the northern extremity towards its center. At a distance of 17 feet from this end of the mound about two bushels of field stones and angular burned stones derived from fireplaces were unearthed in a restricted area. They were not arranged in any order and it was thought that they were simply dumped into the mound to assist in its construction. The lowermost stones rested on the soil upon which the mound had been constructed, about three feet beneath the mound surface. At a distance of 40 feet from the north end of the mound a small number of human bones, though with no skull present, were encountered. These were near the base of the trench and in only a fair state of preservation. Seven feet beyond these bones was a bone reburial. A well preserved skull of an adult, the skull resting on its side, was found among the bones. These were placed two feet below the top of the mound. This skeleton is presumably the one labeled UW-2 in the accompanying paper by C. W. Merbs. About four feet beyond this burial were found the jaws and a few bones of an animal which was identified as the remains of a red fox, **Vulpes fulva,** by Professor George Wagner. They lay near the base of the mound, two feet below the surface, a few feet east of the center line of the trench.

University Ridge Group

This group of mounds was first described as the "University Group No. 4" (Brown 1912: 12-13) and subsequently as the "Ridge Group" (Brown 1914: 387-388). It originally consisted of two linear mounds and a bird effigy but one of the linear mounds and the effigy were destroyed by agricultural activity when this area was used as an orchard by the University. The remaining linear mound was excavated in 1931 under the supervision of Mr. Brown before the area was occupied by the Forest Products Laboratory.

The excavated mound, oriented in a general northeast-southwest direction, was the largest of the linear mounds having a length of 165 feet, a width of 17 feet at its eastern end and 14 feet at the opposite end. Its elevation at the eastern end was about 8 inches, near its middle from 14 inches to 24 inches, and about 3 inches near its western end where its surface gradually disappeared in the level of the surrounding woodland soil. The original height at the center may have been slightly greater since the surface had been partially leveled at some time by the removal of a small amount of soil.

The excavation of the mound proceeded by digging a four foot trench down its length and by later widening this trench to from six to eight feet in various places between its eastern end and to beyond the midpoint of the mound. The structure was found to have been built on the natural clay surface of the ridge top, with little or no attempt having been made to remove stones or to level or otherwise prepare the original surface. In its construction dark surface soil obtained at the base of the ridge or at some other convenient locality in the vicinity was employed. Mr. Brown estimated the amount of earth thus moved to have been about 9,500 cubic feet. Near the western extremity of the mound some clay was found to have been mixed with the black soil. At several places beyond the middle of the mound small deposits of ashy soil were found. These were regarded as having been brought to the mound from some place where there had been a camp or other fire. There was no stratification of the soil in the mound and only a faint indication of the dumping of small loads of earth. In several places at the eastern end small deposits of small stones had been carried in with the earth. The mound fill was

well packed due to its having lain undisturbed for a long period of time.

The excavation disclosed that at several points large glacial boulders were embedded in the clay subsoil, projecting a few inches upward into the mound fill. One group of three large boulders was present ten feet from the eastern end of the mound near the north wall of the trench. A second group of two boulders was situated six feet from the first and a few feet beyond the southern wall of the trench. About 8 feet beyond these, in the middle of the trench a third group of smaller rocks, about 12 in number, was found in a low heap, none showing any signs of fire or burning. A few bits of charcoal were found near the group but these were thought to have been carried in with the earth in the building of the mound. Whether or not the groups of boulders had any special significance in the mound's construction could not be determined.

In the center of the trench, 30 feet from the eastern end of the mound, a large flat-topped glacial boulder was found imbedded in the clay subsoil. At the eastern side of this rock an aboriginal fireplace was uncovered on the clay floor of the mound. This was irregularly circular in shape with a level surface of burned earth. No ashes or charcoal were found on or near this hearth, these apparently having been removed. The fireplace was regarded as having been constructed during whatever ceremonies may have taken place when the earthwork was constructed.

A few additional loose stones were found at various places in the eastern half of the mound. These had either been brought in during the building of the mound or were already on the surface when its erection was undertaken. No human bones or burials were found. The only cultural material consisted of a few chips incorporated in the mound fill and a crudely flaked side scraper of mottled flesh-colored and grey flint with dimensions of 58 x 35 x 9 mm.

Picnic Grove Mounds

The mound group was described and illustrated under the name "University Group No. 2" (Brown 1912: 8-9) but they are also designated the "Picnic Grove" mounds in his notes. The two linear mounds remaining at the time of his original description were subsequently destroyed by the construction

of Adams and Tripp Halls on the University campus. Prior to their destruction they were excavated under the supervision of Mr. Brown in 1938.

Broad trenches were excavated the entire length of both mounds but with no evidence of human burials recovered in either of them. Both were built on a clay surface with a lower layer of clay and above it a layer of black soil 1 to 1.5 feet in thickness. At a distance of about 35 feet from the north end of the tapering mound a large grey granite boulder was found imbedded in the clay subsoil with the top of the boulder extending a few inches into the mound fill. Near this boulder was a single projectile point of dark grey-brown chert. The point (Figure 6 A) was an outline suggestive of a small lanceolate form but it is a stemmed form with a small inconspicuous shoulder. Its dimensions are: length, 38 mm.; width, 19 mm.; and thickness, 9 mm. In addition to this specimen a few scattered flint chips and fragments of a projectile point and a small knife were also found. The knife fragment is a small, delicate form, presumably with a pointed ovate outline (Figure 6 D). The trench in the other mound produced a few hearth stones and two projectile points, both manufactured from a grey chert. One is a **Waubesa Contracting Stem** type and is 27 mm. wide and 8 mm. thick (Figure 6 B). The second point (Figure 8 C) is a **Madison Side Notched** type and, like the others of this form, is carefully finished by pressure flaking. The dimensions of this point are: length, 55 mm.; width, 31 mm.; and thickness, 9 mm.

Picnic Point Mounds

In 1939 the Picnic Point mounds, which had been previously

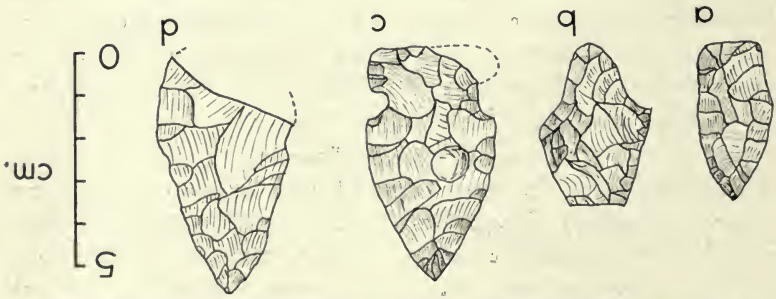

Figure 6. Chipped stone implements, Picnic Grove Mound No. 2,

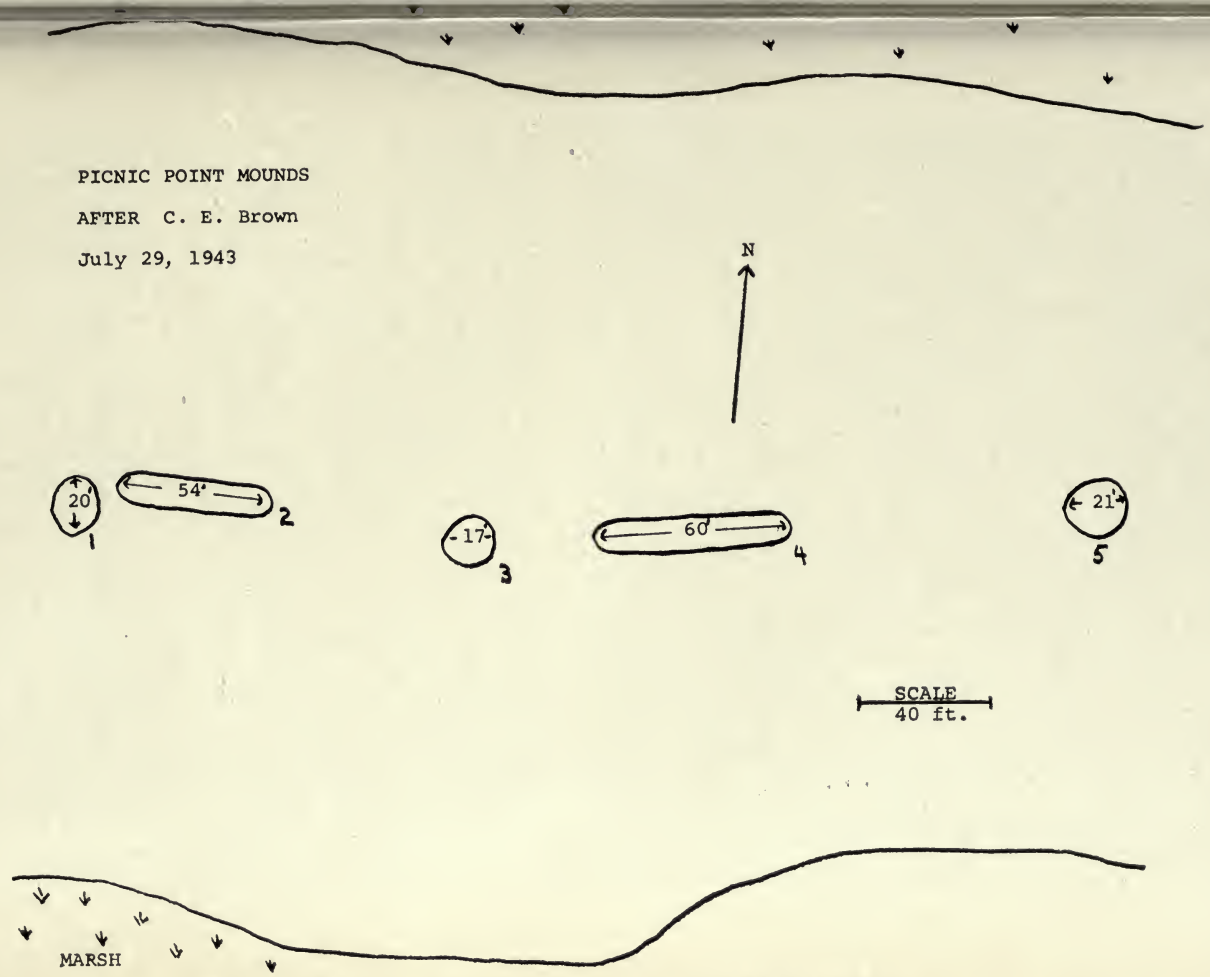

Figure 7. Sketch map of main section Mound Group.

reported (Brown 1912: 13-14) were excavated and then restored. A sketch may of the cluster of two linear mounds and three conical mounds prepared by Mr. Brown in 1943 is given as Figure 7. Two additional conical mounds are located closer to the tip of the point.

In the excavation of conical mound No. 3, a burial was found on the floor of the mound 18 inches below the surface, 8 feet 8 inches from the western and 8 feet from the northern edges of the mound. It is reported to have been a bundle reburial, the bones present including an upturned skull with a number of leg, arm and other bones lying by its side and under the skull. This skeleton we designate UW-3 in the accompanying paper by Mr. Merbs. The mound is said to have been constructed of a black soil which contained flint chips, a broken hammerstone, three sherds, a fragmentary projectile point and a lump of red ochre. At least two additional burials were recovered from the Picnic Point mounds (UW-4 and UW-5) and were so labeled in the collections of the Museum of the State Historical Society but no records are available to indicate the specific mound or the burial position.

The bulk of the cultural materials preserved in the Museum are simply designated "Potsherds, scrapers, broken points, etc. obtained during repair of these mounds, August 1-15, 1939," no reference to specific mound being given. The material has been taken as indicative of the group in general and indirectly of the village occupation on Picnic Point.

The chipped stone material consists primarily of flakes and core fragments, debris accumulated through the manufacture of chipped stone implements by the prehistoric occupants of Picnic Point. Four hundred and forty-eight of the flakes and fragments are of chert, with only a single flake of grey quartzite present.

Projectile points were not abundant. One fragment, manufactured from a grey chert, is a **Madison Side Notched** type (Figure 8 A). The point is somewhat smaller than many of this type and has a maximum width of 25 mm., and a thickness of 7 mm. A second large projectile point fragment is difficult to classify. It is manufactured from a mottled grey and white chert and has a fabulous, rounded stem produced

by shallow notches in the side (Figure 8 B). The maximum width of this point is 29 mm., and the thickness is 8 mm. Two pointed blade fragments of grey and white chert are probably also fragments of two large projectile points. Four projectile points are rather crudely manufactured, small triangular forms. Three are of white or mottled grey and white chert while one is manufactured from a light brown quartzite. The quartzite point is the most carefully finished of the group and has nearly straight sides and base and bears delicate pressure retouching on both faces. This point is 24 mm. in length, 18 mm. in width, and 4 mm. in thickness. The other three triangular points are considerably cruder and bolder flake scars. Their sides are slightly convex and the base is either straight or slightly convex. They range in length from 27 to 32 mm., from 16 to 22 mm. in width, and from 4 to 7 mm. in thickness. The triangular points are illustrated in Figure 8, C-F.

Three implements may be classified as scrapers. A small ovate end scraper of Type B, having a ventral surface consisting of a single flake scar, is manufactured from a pink chert. Only a minimal amount of retouching is present at the end and sides (Figure 8 G). The dimensions of the specimen are 33 x 25 x 8 mm. A small fragment of an end scraper which can not be classified as to type is manufactured from a white quartzite. A third artifact is a crudely manufactured side scraper made from banded salmon and white chert (Figure 8 H). This specimen is 48 x 36 x 17 mm. in dimensions.

Four implements are whole or basal fragments of knives. The only complete specimen (Figure 8 I) is a small pointed ovate form manufactured from a mottled brown and white chert. It is a relatively thin, carefully finished form and has dimensions of 43 x 26 x 9 mm. The other three specimens, manufactured of mottled grey and flesh colored chert, are heavier and primarily made by percussion techniques. Generally similar forms may be represented by the other illustrated specimens though one specimen has a more distinct basal area (Figure 8 J-L). Five additional fragments seem to be pointed ends and sections from similar implements. They are manufactured from grey and pink chert.

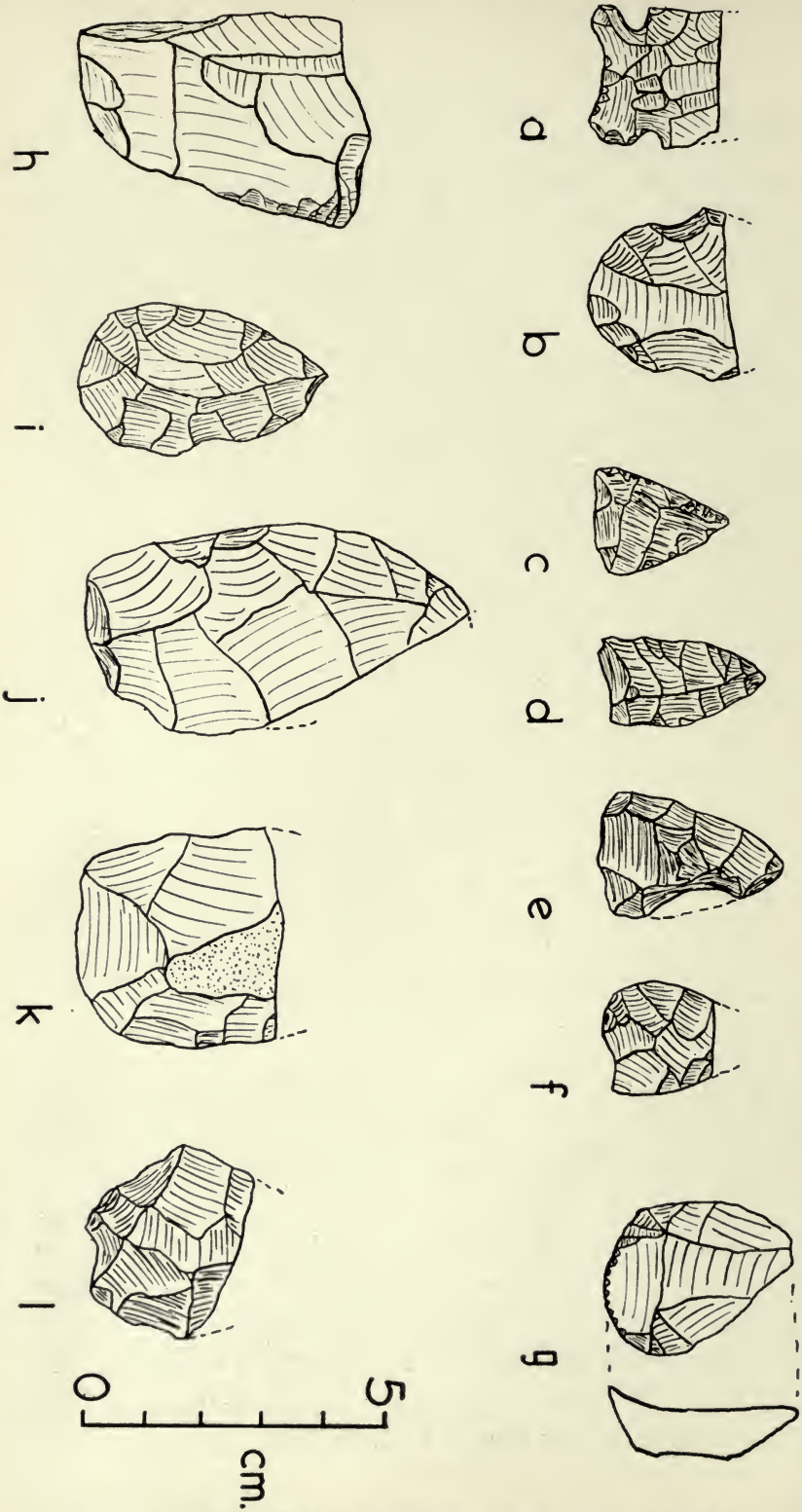

Figure 8. Chipped Stone implements, Picnic Point Mounds.

The only additional stone implement is a portion of the blade of a ground and polished stone axe or celt. The specimen is manufactured from a fine textured grey stone.

A series of 55 sherds is also present in the material. Forty-eight of these are body sherds of which 11 had a smooth surface and 37 are cord roughened. All are grit tempered and generally fine in texture. Five sherds are classified as **Madison Cord Impressed.** Three are rim sherds and had slightly variant styles of decoration. One had a band of diagonal impressions on the exterior rim covering an area 28 mm. in width. The cord impressions continued over a slightly flattened lip and extended, still in a diagonal direction, 8 mm. on the interior of the rim. This vessel had a thickness of 5 mm. in the rim area. A second rim sherd had a series of horizontal cord impressions on the rim contiguous to a band of diagonal impressions 7 mm. wide immediately adjacent to the lip. There was no decoration on the rounded lip or interior. The strand of cord used to form the imprint was a two ply cord in which each of these individual elements was in turn a two ply cord. The sherd had a maximum thickness of 6 mm. A third rim sherd has bold vertical cord roughening on the outer surface. The inner surface of the rim bears a band of diagonal cord impressions of 10 mm. in width. The maximum thickness of the sherd is 7 mm. Two rim sections, on which the lip is not present, also bear horizontal cord impressions in which the horizontal elements are bordered by knotted impressions set at a right angle to them and forming a border design. These sherds are slightly thicker, being 7 and 8 mm. in maximum thickness, perhaps simply reflecting the fact that the shoulder area is being approached. One rim sherd is similar in paste characteristics but distinctive in having a marked collar 20 mm. in height. The lip is flat and smooth and the interior rim bears smooth diagonal notches adjacent to the lip. Its characteristics are appropriate for the type, **Aztalan Collared.** One small rim fragment is not classified as to type. It is a portion of a smooth-surfaced vessel with compact paste and grit temper and has a wall thickness of only 5 mm., tapering to 3 mm. at the slightly flattened lip. The surface color is a dark brown while the core is black. Its small dimensions,

17 by 26 mm., make an attempt at identification risky, but it could be of Middle Woodland derivation.

Arboretum Mounds

The excellent history of the Arboretum prepared by Mrs. Sachse summarizes the excavations in these mounds and includes a map of the group (Sachse 1965: 31 and Fig. 4). One skeleton in the collections of the Museum of the State Historical Society (UW-6) is labeled as being from a conical mound. The record of the excavations in the two conical mounds which are preserved and summarized below, encountered no burials so the context of this specimen is not known.

In 1943 a group of University students, working under the direction of Professor Sidney Slotkin, undertook the excavation of the southeast mound of a group of three conical mounds located at the head of the mounds in the Arboretum woods. This mound is a short distance north of the automobile parking area. The mound was about 30 feet in diameter and 16 inches in height. A five foot trench was staked out and dug through the mound from its south to north edges. At the northern edge, a number of large boulders were encountered. These may have been carried to this position when the mound was constructed. The mound was found to have been built of yellow clay with a few inches of top soil covering this fill. Other than a few flint chips, no cultural material or human bones were recovered.

A second mound in the Arboretum group was excavated in 1941 under the supervision of Mr. Brown and Professor W. W. Howells. The mound was a small conical form measuring about 16.5 feet in diameter and located immediately north of a "panther" form and in general about 150 yards south southeast of the main group. The southwest quadrant of the mound was excavated first. No human remains or objects of human origin were found in this quarter. A further round test pit was dug to the northeast of the center without disclosing any additional features. No original soil line was found at the base of the mound and the line of disturbance or fill was found to slope downward toward the mound's center. Near the center a lens and a deeper deposit of light yellow sand was encountered at about the base of the mound.

Interpretations

On the preceding pages we have presented the extant record of the excavations of 15 mounds on the University grounds and of a series of burials recovered at the Burton site. The scanty material recovered in these excavations has also been described. Meagre and unspectacular as this material is, this is the kind of data we must use if the prehistory of the Madison area is to be reconstructed. With modern approaches, more perhaps could have been learned but these are our data now. What can we say about the region's prehistory? To answer this question we need to evaluate the character of the evidence available.

In the excavation of a burial mound, data pertaining to three time periods may be recovered. First, and of primary importance, is the information which relates to the culture of the people who actually built the mounds. Here, of course, we have the mound itself — its form, size, and location; all reflecting cultural factors. Since the mounds are constructed as monuments covering the dead, obviously the location of the burial, the position of the body and any accompanying grave goods also are information concerning the builders of the mounds. And, in fact, anything lost or discarded by the builders of the mounds is also useful data but such material presents some problems of interpretation as will shortly be seen. The mounds may contain information of a time period later than the actual construction of the mounds if additional burials were inserted in the mound after it was constructed or perhaps when an additional mantle is applied to the basic form. It is of considerable importance that each burial be carefully considered in terms of whether it is inclusive (i. e., included at the time of construction), or whether it is intrusive or a later insertion into the mound. The mounds may also contain information pertaining to earlier periods of occupation than the construction of the mounds. When the mound fill has been constructed of loads of earth derived from village or camp site areas, artifacts and other debris from these habitation areas are often accidentally included in the fill. One can not date such materials with precision since they could include specimens lost by a wandering Paleo-Indian hunter ten thousand years ago as well as the remains of a camp fire

which perhaps burned only a few days before the mound was actually constructed. All that one can state with precision is that such materials can not be later than the time of mound construction.

Because of the uncertain time range involved in the accidental inclusions of our third category, little attention has been paid to them in earlier effigy mound studies and in some instances a rigorous segregation of the three lines of evidence has not been made. However, the accidental inclusions provide a valuable clue for a provisional seriation of the mounds. Where mounds are constructed from adjacent camp site debris, one may assume as a working hypothesis that some materials from the latest occupations of the area will be incorporated. Thus when a culture sequence for a region as a whole has been established on the basis of the excavation of village sites or stratified rock shelters, the mounds may be given a provisional chronological arrangement on the basis of the latest artifact types included. Mounds and their contents which, when viewed in isolation seem impossible to interpret may become more meaningful as our general knowledge of regional prehistory grows. The artifacts previously described in conjunction with individual mounds are examples of materials which are either contemporary with mound construction or represent an unknown earlier time. Our present interpretations may be highly speculative and should be seen as hypotheses requiring further testing, but they will become sounder as more information accumulates concerning the time range and cultural affiliation of the artifact types.

It seems evident that the various mounds on the University grounds are properly to be assigned to the Effigy Mound culture or, more precisely, to the Effigy Mound tradition. This cultural group would seem to designate in Wisconsin a large series of local variants, perhaps reflecting a widely scattered and thin population. While not the earliest occupation of the region, Madison was a flourishing center during the period of the Middle Woodland cultures between about 500 B. C. and A. D. 500. Traits such as the extended burials and the perforated bear's tooth in the Mendota Beach area are characteristic of this time horizon. The existence of a cultural horizon during this time period does not rest solely on the

limited evidence just cited but had previously been demonstrated by the excavations at the Outlet Site on Lake Monona (Whiteford 1949; Bakken 1950). That the mounds on the University grounds do not represent this early time period, however, is indicated by differences in burial customs. The mounds very likely were constructed subsequent to A. D. 500.

It has been suggested that the simple conical and linear forms are characteristic of an early phase in the development of the Effigy Mound tradition, with the more complex animal forms representing a later development. But since these simple forms also persisted through the later phases, form alone does not provide a reliable means of assigning an age to individual mounds. One variant feature which has not received adequate consideration as a possible marker is the location of the mounds. While doubtless influenced to a degree by terrain, two kinds of locations were selected in the construction of the mounds. Some of the mounds are built upon elevated ground, upon commanding locations that provide a view of the surrounding countryside. Thus the mounds in the Arboretum and those of the University Ridge Group are located on elevated positions and, for the most part, some distance from the areas selected as village sites. On the other hand, the Willow Drive Mounds, the Picnic Grove Mounds, and the Picnic Point Mounds all are located immediately adjacent to the lake or to a stream and, as shown by the abundance of incorporated refuse, were also adjacent to camp sites. The difference in spatial distribution is certainly a matter of cultural preference and may also reflect a difference in time of construction. The fact that we have little or no cultural materials from the Arboretum and from the University Ridge Group means that this possibility can not be tested until sites are excavated that contain charcoal specimens which may provide radiocarbon dates. However, it should be kept in mind as a possibility to be tested by future research. Could it be, for example, that the scarcity in skeletal material in the mounds in an elevated position is due to deterioration of bones because of greater antiquity or is it simply a consequence of different soil characteristics?

In the report on the excavations of the Blackhawk Village Site (Da5) in Madison, the pottery type **Madison Cord Im-**

pressed was described (Baerreis 1953) and it was suggested that it represented one of the basic pottery types of the Effigy Mound culture. Also present at the site were dentate rocker impressed sherds of Hopewellian affiliation and two projectile point forms, **Monona Stemmed** and a small triangular form. In the initial interpretation, the association of the Hopewellian material and **Madison Cord Impressed** was suggested as indicating the early placement in time of these two types but the single triangular point was thought, and very likely erroneously, to represent a late intrusion. The association of **Madison Cord Impressed** with the Effigy Mound culture was confirmed by the recovery of a vessel of this type in the Otter effigy at the Kolterman mounds in Dodge County (Wittry & Bruder 1955) where small triangular points were also present. A radiocarbon date (M-398) of A. D. 770 + − 250 for this mound is a bit late to support the possibility of an overlap between **Madison Cord Impressed** and Hopewellian types but still sufficiently close to not rule out the possibility. Excavations in effigy mounds on the Beloit College campus confirms the association of **Madison Cord Impressed** and small triangular points with the Effigy Mound culture, though as fill inclusions (Bastian 1958) while a radiocarbon date (M-871) from Mound 6 of A. D. 490 + − 150 pushes the span of time involved back in time. However, the cautionary words of Bastian (1962) regarding the reliability of the date must not be ignored and additional dates sought. Although the excavations by Wittry (1959) in Sauk County rockshelters reveal an overlap in strata between Denzer Stamped (related to Havana ware) and **Madison Cord Impressed,** this situation was attributed to the phenomenon of "progressive mixing," the tendency for recent deposits to contain an admixture of earlier artifacts. Wittry strongly argues for the development of Effigy Mound only after the disappearance of Hopewell in Wisconsin, dating the dividing line between the cultures as about A. D. 500-600. Since this argument is coupled with the suggestion that Effigy Mound originated by the addition of mound building, pottery and presumably agriculture to a late surviving culture of Archaic characteristics, I do not find it entirely convincing. With this oversimplified review of some of the present interpretation of the Effigy Mound cul-

ture, we may return to the specific problem of interpreting the campus mounds.

We have already indicated that since there is evidence for Hopewellian influence in the Madison area, it is necessary to consider the possibility that some conical mounds could have been built by this cultural group. Neither the burial customs nor the artifact inclusions sustain such an interpretation. The mounds here being considered were built after the Effigy Mound tradition had come into being. We can not place in time those mounds constructed on elevated positions (the Arboretum and University Ridge groups), their dating being posed as a problem for future study.

The two linear mounds of the Picnic Grove group contained only large projectile points and no pottery was recovered. On the basis of fill inclusions, these may well be the earliest in the campus area but this placement is based on negative evidence and may well be in error. The inclusion of sherds that seem to be of the Madison **Cord Impressed type,** place the Bird Effigy and the first linear mound in the Willow Drive group as next in the sequence. Primary flexed burials appear characteristic of this stage. The remains of two skeletons comprising bone reburials in the first linear mound, it will be recalled, are intrusive burials located only about a foot below the surface. They therefore date from some time after the construction of the mound. The inability to identify specific cultural materials from the second tapered linear mound in this group makes it impossible to place it in a seriational sequence. Finally, it is suggested that the conical and linear mounds on Picnic Point are the latest in the sequence, though we can not rule out the possibility that some individual mounds could be early. They yielded both **Madison Cord Impressed** pottery and small triangular projectile points and one sherd of **Aztalan Collared,** the latest pottery type in the sequence. The one recorded Picnic Point burial is a bundle type. They thus may be similar in age to those at the Burton site.

It is thus suggested that the various mounds on the University grounds span a considerable period of time. The earliest may date at about A. D. 500 while the latest, to judge by the recent Aztalan dates which provide a placement in time for **Aztalan Collared** (Baerreis & Bryson 1965), may be as re-

cent as A. D. 1100. If this time placement is valid it indicates that in the Madison area many of the mounds of late time placement are simple conical and linear forms rather than the elaborate effigy forms. The limitations of the data on which these interpretations are based must be kept in mind. If some of the sherds, such as the single example of **Aztalan Collared** from Picnic Point, were recovered from the surface of a mound rather than from inclusive fill, it would not actually date the time of construction. Archaeological interpretations can only be as secure as the soundness of the contextual evidence of the material being interpreted. We have considered here only the lines of evidence derived from the cultural materials and their dates. The other body of data which can provide equally important insights is the skeletal material itself, considered in the paper by Charles F. Merbs.

REFERENCES

Baerreis, David E.
1953 "Blackhawk Village Site (Da5), Dane County, Wisconsin," **Journal of the Iowa Archeological Society**, Vol. 2, No. 4, pp. 5 - 20.

Baerreis, David A. and Reid A. Bryson
1965 "Climatic Episodes and the Dating of the Mississippian Cultures," **The Wisconsin Archeologist**, Vol. 46, No. 4, pp. 203-220.

Bakken, Charlotte T.
1950 "Preliminary Investigations at the Outlet Site," **The Wisconsin Archeologist**, Vol. 31, No. 2, pp. 43-70.

Bastian, Tyler
1958 "The Beloit College Mound Group (Ro15)—A Preliminary Report," **The Wisconsin Archeologist**, Vol. 39, No. 3, pp. 15-173.
1962 "Some Additional Data on the Beloit College Mound Group," **The Wisconsin Archeologist**, Vol. 43, No. 3, pp. 57-64.

Brown, Charles E.
1912 "Undescribed Groups of Lake Mendota Mounds," **The Wisconsin Archeologist**, Vol. 11, No. 1, pp. 7-32.
1914 "Prehistoric Indian Monuments on the University Grounds." **The Wisconsin Alumni Magazine**, Vol. XV, No. 9, pp. 383-390.
1931 "Campus Landmarks," (Pamphlet), Third Issue, 12 pp. Madison.

Sachse, Nancy D.
1965 A Thousand Ages: The University of Wisconsin Arboretum. Madison.

Whiteford, A. H.
1949 "A Report on the Outlet Site on Lake Monona," **The Wisconsin Archeologist**, Vol. 30, No. 1, pp. 22-38.

Wittry, Warren L.
1956 "Kolterman Mound 18 Radiocarbon Date," **The Wisconsin Archeologist**, Vol. 37, No. 4, pp. 133-4.

1959 "Archeological Studies of Four Wisconsin Rockshelters," **The Wisconsin Archeologist**, Vol. 40, No. 3, pp. 137-267.
Wittry, Warren L. and E. G. Bruder
1955 "Salvage Operations at the Kolterman Mound Group, Dodge County," **The Wisconsin Archeologist**, Vol. 36, No. 1, pp. 3-12.

EFFIGY MOUNDS AND THE BURTON SITE – A STUDY IN HUMAN BIOLOGY

Charles F. Merbs

Introduction

What is presently known about the human biology of Wisconsin's prehistoric Indians? The embarrassing answer is "practically nothing." It is generally thought that Indian populations of more than one morphological pattern occupied the state at various time periods, and that they could be correlated to a greater or lesser degree with populations found in the Midwest in general. It is further thought that the crania of Wisconsin Indians have been subjected to a process observed in other parts of the world, a process referred to as brachycephalization (trend toward round-headedness). Despite the fact that both of these ideas are probably correct, they almost totally lack support in the form of published data. And, even if supported, they could not be said to contribute much to the question at hand.

What are the reasons behind this sad state of affairs and how may the situation be remedied? Much of the blame obviously lies with the poor conditions for preservation in the state. It is difficult for an archeologist to become enthused, for example, when he encounters nothing more than crumbs of human bone which practically disintegrate at the touch. Attempts to recover such material with the care and precision characteristic of good archeology must seem hardly worth the time and effort involved. This is especially true when the future of the excavated material is often nothing more than a permanent, undisturbed repose in a museum drawer.

When on considers the fragmentation, exfoliation, erosion, warping and general friability to which skeletal material is subject in the state, might not the best approach be to collect only the finest skulls as "type specimens" and not bother about the remainder. The answer, of course, is that all human

skeletal material, no matter how poorly preserved, is valuable and worthy of careful recovery. Furthermore, a fragmentary population (or portion thereof) is usually of greater value than a single, intact skull. This is because people belong to populations and it is the population, not the individual, that is the significant unit in terms of evolutonary process. It is obvious that a single human skull will exhibit some of the traits characteristic of its population. There is usually no way to identify these traits from those unique to the individual, however, and nothing can be determined about the range and pattern of variation present.

If damaged or fragmentary sketetal material is useful, what kinds of information may be derived from it? Many of the standard craniological measurements will not be possible, of course, and the same may be true of certain observations of form (nasal profile, frontal curvature, etc.). It will usually be possible, however, to estimate the age (within broad limits) and sex of even fragmentary remains (studies of cremated populations being a case in point) and this is the place to begin. Perhaps the most useful items of information, when dealing with fragmentary material, are the so-called "discrete traits", or discontinuous variations of the skeleton. These traits are also occasionally referred to as skeletal "anomalies". They include such things as tori, multiple or accessory foramina, ossification deficiencies, and sutural bones, and they form a distinctive pattern for each population. Information of this sort, when it begins to accumulate, can be dealt with statistically and made to yield important information regarding biological relationships. The dentition (including loose teeth and empty root sockets) may also contribute useful data, from supportive evidence on age and sex, to items of pathology, nutrition, and, in some cases, cultural activity. Similar kinds of data may also be obtained from cranial and postcranial parts.

Of what good is this potential information, however, if physical antropologists do not feel it worth their time to extract it? There is no doubt that many midwestern archeologists are becoming very discouraged with their inability to find people qualified and willing to work with human skeletal material. Part of the reason for this certainly lies in the short-

age of trained physical anthropologists in this country. Given this shortage, and the great range of opportunity thus available to each physical anthropologist, it should not be surprising that the exotic usually takes precedence over the mundane. Often, however, the problem is merely one of communication. Interested, qualified people, usually in the form of advanced graduate students, do exist, but the archeologist does not exert enough effort to find them, nor they to find the skeletal collections. Even when a real lack of trained personnel exists, the problem appears headed for at least partial solution in the greatly accelerated physical anthropology programs now operating in several midwestern universities, Wisconsin and Chicago among them.

The Material — Age and Sex

The immediate objective of this report will be to examine some typical — that is poorly preserved — Wisconsin skeletal material in an attempt to extract useful biological information. The material comes from the Lake Mendota area of Dane County and its cultural context is discussed by Baerreis elsewhere in this issue.

The University of Wisconsin effigy mound series includes the skeletal remains of 6 individuals. Five of these came from the Lake Mendota campus, the sixth from the University Arboretum on Lake Wingra. The Lake Mendota material breaks down as follows: 2 skeletons from the Willow Drive group (1 from a bird effigy — **UW-1,** and 1 from a linear mound — **UW-2**) and 3 skeletons from the Picnic Point group (1 from mound No. 3 — **UW-3,** and 2 from another mound in this group — UW-4 and **UW-5**). The arboretum skeleton — **UW-6** — was obtained from a conical mound.

The skeletal material from the Burton Site represents a minimum of 10 individuals, and probably not more than 10. Two of these are infants (**Bur-1** and **Bur-2**), 2 are children (**Bur.3 and Bur-4**), 2 are young adults (**Bur-5** and **Bur-6**) and 3 are older adults (**Bur-7, Bur-8** and **Bur-9**). The tenth individual (**Bur-10**) appears to be represented by only a fragmentary mandible, and, although this is clearly adult, a more specific estimate of age was not possible. The minimal estimate of 6 adults for the Burton Site was determined by the presence of 6 complete or fragmentary mandibles. Five of these mandibles

could be matched with crania, largely on the basis of dental occlusion and wear patterns. It was also possible to match the postcranial skeleton of **Bur-5** with its cranium and mandible, but this could not be done for the other 5 adults. See **Table 1** for an inventory of the skeletal material from the two series.

The sex of the effigy mound skeletons was determined largely on the basis of cranial features although postcranial bones, particularly the innominates, were also utilized for **UW-1, 3, 4** and **5.** Age, in every case, was estimated from the degree of endocranial suture closure although other features of the

TABLE 1

UW-1 Partially restored cranium and fragmentary mandible; postcranial skeleton nearly complete but in very poor condition.
UW-2 Cranium in fair condition.
UW-3 Fragmentary cranium; several postcranial bones in poor condition.
UW-4 Fragmentary skull; postcranial skeleton nearly complete but in poor condition.
UW-5 Fragments of skull and pelvis.
UW-6 Calvarium, 4 cervical vertebrae and assorted teeth.

BUR-1 Cranial fragments; nearly complete postcranial skeleton including both femora.
BUR-2 Left humerus and right femur.
BUR-3 Right ilium, tibia and femur, and several cranial fragments.
BUR-4 All major bones of the pelvis and lower limbs plus cranial fragments.
Bur-5 Nearly complete skeleton in relatively good condition.
BUR-6 through BUR-10:

Bone	Total	Right	Left	Individuals Represented
Mandible	5	0	0	5
Cranium	4	0	0	4
Femur	7	3	4	4
Humerus	5	4	1	4
Ulna	6	3	3	3
Innominate	6	3	3	3
Tibia	6	3	3	3
Calcaneum	5	2	3	3
Scapula	4	2	2	2
Radius	4	2	2	2
Fibula	4	2	2	2
Talus	4	2	2	2
Sacrum	1	0	0	1
Vertebrae	10	0	0	?

Inventory of Skeletal Remains

cranial and post-cranial skeleton were utilized when available. No pubic symphyses were available for study.

The ages of the nonadults from the Burton Site and **Bur-5** were estimated on the basis of total skeletal development. Other adults were assigned age and sex estimates solely on the basis of cranial features. One pair of pubic symphyses were recovered from this site, however, this matching the skull of **Bur-6** in respect to age and sex. Estimates of age and sex are summarized in **Table 2.**

TABLE 2

Cat. No.	Sex	Age
UW-1	Male	Young Adult (21-25)
2	Male	Young Adult (21-25)
3	Female	Young Adult (approx. 21)
4	Female	Young Adult (approx. 25)
5	Male	Middle to Old Adult (40-55)
6	Male	Young Adult (18-20)
Bur-1	?	Neonate
2	?	Infant (0-6 mos.)
3	?	Child (3-4 yrs.)
4	?	Child (4-5 yrs.)
5	Male	Young Adult (16-17)
6	Female	Young Adult (21-25)
7	Male	Middle to Old Adult (40-55)
8	Male	Old Adult (50+)
9	Male	Old Adult (50+)
10	?	Adult

Estimates of age and sex

Cranial Measurements

The poor condition of the skulls in both series greatly limits the number of measurements which can be taken with accuracy. No signs of artificial cranial deformation are evident. In general, the skulls are long in relation to their breadth (2 are dolichocranic and 2 are mesocranic) and the minimum frontal diameters are of average size. No basion-bregma measurements are possible and thus no facial indices can be obtained. The sloping foreheads of the crania of both series are reflected in frontal subtenses averaging slightly over 24 mm. Nasal apertures show considerable variation in the relationship of length and breadth, but they average in the

mesene, or middle range. The nasal bones are badly damaged, but nasalia upper breadth measurements were obtained from 5 crania. These indicate the bones to be quite broad where they articulate with the frontals. It may also be noted that the nasal bones are markedly constricted in their midlength, this giving them an hourglass appearance. The orbital index is in the mesoconch, or midrange, and the orbits are rounded in appearance. The palate is broad as shown by high maxillo-alveolar indices. Measurements of the cranium and mandible are summarized in **Tables 3 and 4.**

Postcranial Measurements

Because of the extremely poor condition of the effigy mound

FIG. 1. UW-6. Back view of skull showing Inca bone.

TABLE 3

	UW-1 Male	UW-2 M	UW-6 M	BUR-5 M	BUR-6 F	BUR-7 M	BUR-8 M	BUR-9 M
Glabello-occipital lgth.	168	183	190	-	200	-	-	-
Maximum breadth	130	137	128	-	135	-	-	-
Auricular height	117	117	-	-	-	-	-	--
Minimum frontal diameter	92	88	-	89	87	-	91	97
Frontal subtense	24	23	-	24	26	-	23	26
Upper facial height	66	69	-	71	-	-	-	-
Nasal height	50	50	-	48	55	-	-	-
Nasal breadth	28	27	-	25	25	-	-	-
Nasalia upper breadth	13	11	-	11	13	-	-	12
Orbital height	32(R)	36(R)	-	36 (L)	34 (L)	-	-	-
Oribital breadth	38(R)	41(R)	-	41 (L)	41 (L)	-	-	-
Maxillo-alveolar length	53	56	-	53	53	53	-	-
Maxillo-alveolar breadth	63	64	-	67	63	65	-	-
Cranial index	77	75	67	-	68	-	-	-
Nasal index	56	54	-	52	45	-	-	-
Orbital index	84	88	-	88	83	-	-	-
Maxillo-alveolar index	119	114	-	126	119	123	-	-

Cranial Measurements and Indices

TABLE 4

	UW-1 M	UW-4 F	BUR-5 M	BUR-6 F	BUR-7 M	BUR-8 M	BUR-9 M	BUR-10(?)
Condylo-symphyseal length	-	-	-	102	-	-	105	-
Ascending ramus breadth	32(R)	33 (L)	36(R)	40 (L)	38(R)	33 (L)	36 (L)	36 (L)
Condylar height	57(R)	-	-	74 (L)	62(R)	52 (L)	-	69 (L)
Symphyseal height	30	37	35	37	33	36	36	-

Mandibular Measurements

long bones, only 2 postcranial measurements could be obtained. Material from the Burton Site yielded considerably more measurements, but in no case could an individual skeleton be studied. It was a simple matter to pair up the femora, however, and this has been done in **Table 5.**

TABLE 5

HUMERUS:	side	length	mid-shaft dia.	head dia.
Bur(1)	R	326	26	48
(2)	L	323	21	--

RADIUS:	side	length	ULNA:	side	length
Bur(3)	L	265	Bur(4)	R	266

FEMUR:	side	length		subtrochanteric		midshaft		head
		max.	bicon.	a-p	m-l	a-p	m-l	diam.
Bur(5a)	R	437	435	25	34	28	22	46
(6a)	R	---	---	26	32	--	--	--
(7a)	R	---	---	26	35	--	--	--
UW-1	L	425	---	--	--	--	--	--
Bur(5b)	L	---	---	24	33	--	--	--
(6b)	L	449	445	26	32	28	23	48
(7b)	L	---	---	26	36	--	--	--

TIBIA:	side	length	nutrient foramen	
			a-p	m-l
Bur(8)	R	366	39	21
(9)	R	---	41	23
UW-3	L	---	38	22
Bur(10)	L	---	39	23
(11)	L	---	39	21

FIBULA:	side	length
Bur(12)	R	346

PLATYMERIC INDEX:	Bur(5a)	74	Bur(5b)	73
	(6a)	81	(6b)	81
	(7a)	74	(7b)	72
PILASTERIC INDEX:	Bur(5a)	127	Bur(6b)	122
FEMORAL ROBUSTICITY:	Bur(5a)	11.4	Bur(6b)	11.4
PLATYCNEMIC INDEX:	Bur(8)	54	Bur(10)	59
	(9	56	(11)	54
			UW-3	58

Postcranial measurements and indices

The femora are flattened just below the lesser trochanter as indicated by low platymeric indices and flattening is aslo characteristic of the tibiae at the level of the nutrient foramen. The femoral pilaster is well-developed as shown by high pilasteric indices, but this does not detract from the overall gracile appearance of the Burton Site skeletons. This gracility can be seen in the single femoral robusticity index obtainable. Although actual measurements could not be obtained for the effigy mound material, the general pattern is one of slightly greater robusticity.

Making use of femoral lengths, the statures of 3 individuals (all males) have been estimated: (**UW-1**, 164 cm. (64.5 in.); **Bur(5a)**, 166 cm. (65.5 in.); and **Bur(6b)**, 169 cm. (66.5 in.) [1] These estimates indicate a relatively short stature for the group as a whole.

Cranial Observations

The facial region of the male crania from the effigy mounds and the Burton Site is only moderately rugged in appearance. The malars are narrow and the zygomatic arches tend to be thin. Supraorbital ridges, on the other hand, range from slight to intermediate in the females to extremely heavy in the males, and all are of the median type.

The occurrence of supraorbital foramina is markedly different in the 2 series. Foramina are present on 7 or 8 supraorbital margins of the Burton Site crania, but on none of 4

[1] Trotter and Gleser, 1958 (Table for Mongoloids, page 120).

FIG. 2. UW-1. Lateral view of skull.

from the effigy mounds. Accessory foramina and notches are present with about equal frequency in both groups. The nasal depression is shallow on all observable crania and a slight trace of metopic suture may be noted directly above nasion on 2 crania (**Bur-5** and **8**). There are no instances of complete metopism.

The shape of the nasal profile can be determined on only 1 skull (**Bur-6**); it is concavo-convex. The subnasal margin is moderately to poorly defined in both series. Zygomaticofacial foramina are minute when present and average about 1 per malar. The inferior margins of the zygoma show no tendency toward eversion in either group. Infraorbital foramina are small and in all cases occur individually. Prognathism is slight or completely absent.

Dehiscences of the tympanic plate are present in 3 of 9 effigy mound temporals, but they are absent in those from the Burton Site. The plate tends to be relatively thick for American Indian crania, this being particularly true of the Burton Site skulls. In all cases the shape of the external auditory meatus is oval. The degree of prominence of the suprameatal crest varies considerably in both series and its value as a sex determinant is doubtful. Of great utility in this respect, however, is the suprameatal pit which occurs with variable expression in all of the males but is absent from the female crania. Temporal squama are generally high and rounded, and auditory exotoses are entirely absent. Mastoid processes vary from small to very large and they also appear to reflect sex with accuracy.

None of the crania show any trace of a sagittal keel. The occipital torus is generally bun-shaped on the effigy mound skulls while it tends more toward ridge-shaped in the Burton crania. Inion is poorly defined in both series. The direction of the superior sagittal sulcus can be determined on all 6 of the effigy mound occipitals and on 3 of those from the Burton Site. It turns to the left in **UW-1** and **Bur-5,** is divided in **Bur-7**, and turns to the right in **Bur-6** and all of the other effigy mound crania.

Sutural bones are rare and occur only in the region of the parietal notch and at asterion. The **UW-6** calvarium does con-

tain a complete inca bone, however. Divided hypoglossal canals are present in 2 of 6 individuals and partial division may also be noted in a third (**UW-3**). Traces of a premaxillary suture are still visible on several of the palates in both series. Entirely absent are the following: patent posterior condyloid foramina, palatinetori, precondylar or paramastoid tubercles, os japonica, and pterygoid foramina. In each case, however, the number of possible observations is very small.

Mylohyoid arches are present on 4 of 6 Burton mandibles, but in every case they meaure less than 3 mm. in length. Multiple mental foramina occur on 2 of the mandibles, 3 on the left side of **Bur-5** and 2 on the right side of **Bur-8.** The chin form is bilateral or medio-bilateral for the males of both groups; the two females have medio-bilateral chins. Gonial eversion is very slight or entirely lacking, and none of the mandibles have tori. Discontinuous variations of the skull are summarized in **Table 6.**

Postcranial Observations

The only intact clavicles (**Bur-5**) are short and have narrow diameters, but they also possess well-developed areas of muscle attachment. None of the 7 adult humeri from the Burton Site contains a septal aperture of the olecranon fossa, but one is present in the only humerus from the effigy mounds with distal end intact (**UW-4**, left). Burton Site femora show moderate degrees of torsion and bowing, and they lack third trochanters. All of the 7 adult calcanea from the Burton Site, as well as the only intact pair from the Effigy mounds (**UW-4**), have the anterior and middle facets of the sustentaculum tali joined by an intermediate articular area. This gives the resulting single facet an hourglass shape.

Dental Observations

Although dental enamel is the hardest known substance manufactured by living organisms, the soil and climatic conditions of Wisconsin are such that it has frequently cracked and broken away from the remainder of the teeth by the time of excavation. This, in addition to the high degree of attrition common to Indian dentitions, limits the scope of dental observations. Neither series shows any signs of ablation, nor are any peculiar wear patterns evident. Dental caries are similarly lacking. Two cases of abcessing, one in each series,

TABLE 6

		EFFIGY MOUND					BURTON SITE					
	Side	1	2	3	4	5	5	6	7	8	9	10
Supraorbital foramen	R	—	—	—			+	+		+	+	
	L		—				+	+		+	—	
Dehiscence — tympanic plate	R	—	—	—	—		—	—	—			
	L	+	—	+	—	+	—	—	—			
Parietal notch bone	R	+	—		—			—	—			
	L		—	+	—			—	—			
Asterionic wormian bones	R	+	—	+								
	L		—	—								
Mylohyoid arch	R	—					—		—		+	
	L					—	+	—	+	—	—	+
Multiple mental foramina	R	—				—	—	—		+	—	
	L					—	+	—	—		—	
Divided hypoglossal canal	R	—	—	(—)	+		—					
	L	—	—	(—)	+		—	+				
Zygomaticofacial foramina	R	2	1				2	0			2	
	L		0				2	0			1	

Discontinuous Variations of the Skull

were noted. In both cases the second mandibular molar is affected, and also in both cases the tooth has been worn to the point where little more than roots remain. Only one example of premortem tooth losses and subsequent resorption of the bony socket was noted (**UW-1**). The missing tooth is the first maxillary premolar (right). Moderate shoveling of the upper incisors and occasional extensions of enamel onto the roots of molars were also noted. A peculiar anomaly, the retention of a deciduous mandibular canine, is present on the right side in **UW-1**. The tooth is fully formed but shows no signs of having erupted. With the exception of a small area exposed on the lingual surface of the mandible, the tooth is entirely buried in bony matrix. No other peculiarities of the dentition of this individual were observed. As far as observation is possible, neither Carabelli's cusp nor the protostylid is present. Congenital absence of teeth was also found to be lacking. A study of the root pattern of the third molars gave the following results:

Third Molars — Maxilla	**Burton Site**	**Effigy Mounds**
3 roots, all fused	2	0
3 roots, 2 fused	0	1
1 root	1	1
Third Molars — Mandible		
3 roots, all fused	1	0
2 roots, fused	2	1
2 roots, unfused	3	2

In each instance the condition of the roots was observed to be bilateral. Evidence on cusp patterns is extremely fragmentary and about all that can be said is that +4, Y4 and Y5 are present in the mandible, and 4, 3+ and 3 in the maxilla.

The degree of dental attrition corresponds very closely with the degree of suture closure in both series. All teeth except the third molars of **UW-6** and **Bur-5** show slight wear. The dentine is visible on the teeth of **Bur-6** and the remaining effigy mound crania except **UW-5**. **UW-5** and **Bur-9** have all of the enamel worn off, and several of the pulp cavities are exposed in **Bur-7** and **8**.

Pathology

General osteoarthritis, represented by lipping on articular borders, is present in much of the adult postcranial material

from the Burton Site. Three cases of greater than average severity may be noted. The most serious affects the glenoid fossa of a right scapula. The entire border of the fossa shows heavy lipping while the interior half of its surface exhibits marked rarefaction and eburnation. Neither the matching left scapula nor the corresponding right humerus were recovered. The second case of severe arthritis involves the

FIG. 3. UW-1. Front view of skull showing depression on frontal bone.

tibial facets of a pair of tali (**UW-4**); the third involves the posterior talar facet of a calcaneum.

Signs of osteoarthritis are also present on the mandibular fossae of 4 crania. In 3 cases the involvement is slight, it occurs unilaterally, and the corresponding manibular condyles are not affected (**UW-1**, R; **UW-5**, R; and **Bur-6**, L). The condition occurs bilaterally in a fourth individual (**Bur-7**) with the right side showing considerably greater severity. Destruction is limited to the fossa on the left side; the mandibular condyle is also affected on the right.

Bony spicules, probably representing the ossification of fibrous tissue, are present on 3 of 5 calcanea and a pair of femora, all belonging to adults from the Burton Site. This condition is common to several bones in the human body including the calcaneum, but its appearance on femora is unusual. In this case the spicules follow the linea aspera and are particularly pronounced near the mid-length of the shaft. Another femur (R) from the Burton Site has a small, rounded excrescence on its lateral condyle, and still another (R) has a pit (12 mm. in dia.) just superior to the medial condyle on its posterior surface. A moderate development of osteomyelitis may also be noted near the distal end of a Burton Site tibia (L).

One sign of trauma and another of possible trauma may be noted. The first is a healed fracture of the right clavicle (**UW-4** or **5**); the second is a depression on the frontal bone which may have been caused by a blow from a blunt instrument (**UW-1**).

A-B-O Blood Types

Randomly chosen bone fragments representing each of the 6 effigy mound skeletons were subjected to a test devised by Dr. Margery Gray (1961, personal communication) in an attempt to determine the presence of A-B-O blood group substances. The fragments were crushed and digested in pepsin, and the inorganic salts were removed. The resulting solutions were then dialized and the blood group substances precipitated out in concentrated form through fractionation. The last steps of the procedure consisted of standard inhibition tests in which all 6 specimens gave reactions characteristic of type A individuals. The reactions were strong and could not be

misread, but their interpretation remains to be validated by future research.

Discussion and Conclusion

The small size of the samples described in this report, as well as the virtual lack of comparable data from the Wiscsonsin area, precludes an exhaustive comparative analysis. A tentative analysis supplemented by speculation would appear to be in order, however, and a number of pertinent questions have been asked with this in mind.

Is there any relationship between biological attributes (age, sex, stature, etc.) and the method of burial? Males do outnumber females and 5 of the 6 skeletons from the effigy mounds are young adults. This suggests that the effigy mound form of burial may relate to specific cultural practices associated with young adulthood. The greater representation of males than females indicates that this cultural practice may have been warfare, although a number of other explanations may be equally plausible. The linear distribution of skeletal ages at the Burton Site suggest quite a different interpretation. These ages correspond with what one might expect if part of an extended family were buried at one time. Furthermore, this interpretation receives support from the distribution of discontinuous skeletal variations at the Burton Site, in particular the high incidence of supraorbital foramina, mylohyoid arches, and multiple mental foramina. The presence of these generally low-frequency traits suggests that at least 3 individuals (**Bur-5, 8** and **9**) and perhaps others from the Burton mound may be closely related. One might speculate still further regarding the presence of 10 individuals in the same mound. One explanation would be that the Burton mound represents some sort of accumulative burial practice (such as a Huron ossuary), while another would be that the 10 individuals died within a very short time span (disease or warfare) and were thus buried together. Precise excavation techniques could, if available, narrow down the number of possible interpretations.

Does the inventory of skeletal remains indicate some sort of interference with the usual anatomical representation of skeletal parts (mutilation of the corpse, bundle burial, etc.)? Here is where careful field technique is especially important

as some parts of the skelton may be represented by no more than color variations in the soil. The physical anthropologist in his laboratory has no way of determining whether the materials he receives accurately represent those present in the grave, and he must depend almost entirely upon the notes and photographs of the archeologist for this information. In the case of the material studied in this report, the inventory indicates a very unequal representation of skeletal parts. The significance of this representation is impossible to evaluate, however, in the absence of adequate field data.

To what extent may the individuals represented in the two series be biologically related (share a relatively recent common ancestry)? Besides suffering from a scarcity of data, this question also suffers from the fact that the two "series" are not really comparable series, but represent merely individual burials on the one hand and a multiple burial on the other. On the basis of the few measurements available, one must conclude that there is as much variation between the various effigy mound skeletons as there is between them as a group and those from the Burton Site. The pattern of discontinuous variation differs markedly between the two groups, but it is impossible to know the extent to which the Burton pattern is characteristic of a population or merely of a specific pedigree.

To what extent may broader comparisons be made? One could, of course, compare this material with American Indian skeletons of other time periods and other parts of the Midwest. While this should and undoubtedly will be done as data accumulates, the present analysis will be limited to a consideration of Neumann's "varieties", particularly his Lenapid variety (Neumann, 1952). On the basis of measurements alone, the two reasonably intact effigy mound crania resemble the Ashiwid (Basketmaker) variety more than they do the Lenapid, or any other variety. Since such a relationship is strongly contradicted by all other forms of anthropological evidence, the similarity in measurements must be interpreted as spurious. The comparison of the effigy mound and Lenapid crania, on the basis of nonmetrical (but not discrete) traits, indicates a closer relationship, but these traits tend to be somewhat nebulous and are not easily quantifiable. The total picture in re-

gard to Neumann's varieties then is one of uncertainty.

How does the skeletal morphology relate to the total ecological picture of the populations involved? Here again the physical anthropologist must depend heavily upon the work of the archeologist for an interpretation of his data. The dental pattern of the effigy mound and Burton skeletons (absence of caries, extreme tooth wear, etc.) obviously relates to factors of diet and food preparation, as well as genetic determinants, but archeological evidence is a requisite to discovering what the specific factors might be. Once relationships are established, the next step is one of controlled observation of these factors at work in living populations. So, although we can not yet answer a question such as "to what extent have mineral deficiencies and grit in the food caused the extensive tooth wear observed in the Burton Site and effigy mound dentitions", it is possible to say that the identical pattern of wear in both series strongly indicates that the ecological factors in both cases were extremely similar. One might further add that the similarities in arthritic involvement also suggest strong ecological similarities.

It is obvious that the above questions have barely scratched the surface of the kinds of problems that might eventually be be dealt with. Reference has been made to effigy mounds, for example, but in only one instance is an actual "effigy" being dealt with. Concerning this form of burial practice, one might broaden his base of questioning to ask "are there significant biological differences between skeletons buried in actual effigy mounds, and those in conical or linear mounds?" "Does the morphology of "panther" mound skeletons differ from that of 'bird' mound skeletons?" Answers to these questions would in turn pose new questions, and increase the sophistication with which we can deal with historical problems of human biology, cultural activity and even social organization. This report, then, would appear to ask many more questions than it answers, but it is intended as a start in an area where little equivalent data presently exists for the state of Wisconsin.

Summary

1. Human skeletal material from 5 effigy mounds and the Burton Site mound was analyzed. Six adults (4 males, 2 fe-

males) were represented in the effigy mounds. The Burton mound contained at least 10 individuals — 2 infants, 2 children, and 6 adults.

2. The skulls of both groups tend to be dolichocranic (long-headed), moderately rugged in cranial features, more gracile in terms of postcranial development, and of rather short stature.

3. A number of discrete traits occur with relatively high frequency — supraorbital foramina, mylohyoid arches, and multiple mental foramina at the Burton Site, and dehiscences in the effigy mounds.

4. The dentitions of both groups are characterized by regular placement of the teeth, edge-to-edge bite, considerable tooth wear with resultant abscessing, and an absence of caries.

5. No good basis could be found for assigning this effigy mound material to the Lenapid or any other of Neumann's varieties.

BIBLOGRAPHY

Neumann, Georg K.
1952 Archeology and Race in the American Indian. **Archeology of Eastern United States** (James B. Griffin, ed.), pp. 13-34. Chicago.

Trotter, M. and G. Gleser
1958 A Re-evaluation of Estimation of Stature Based on Measurements Taken During Life and of Long Bones After Death. **American Journal of Physical Anthropology**, Vol. 16 (N. S.), p. 120.

SURFACE COLLECTIONS FROM THREE SITES IN THE CENTRAL ILLINOIS RIVER VALLEY

Patrick J. Munson and Alan D. Harn

The Richardson site (F^v1111), the West Matanzas site (F^v1114) and the Lone Barn site (F^v1223) are located within a four square mile area of the Langellier Bottoms in Kerton township, Fulton County, Illinois. Each of the sites is situated along the sandy western and/or southern margins of the three isolated remnants of the Beardstown Terrace, a low sand-gravel-clay late Pleistocene Terrace which rises only five to fifteen feet above the present floodplain of the Illinois River (Wanless, 1957: 149-50). Prior to modern drainage and leveeing, the terraces were virtual islands surrounded by shallow lakes, swamps and marshes which in turn were bordered by the Illinois River on the south and east and the sluggish, meandering Otter Creek on the west (see Fig. 1).

Surface collections from these three sites, which include a total of 536 chipped stone artifacts (exclusive of utilized flakes), 34 ground stone artifacts (exclusive of manos, metates and hammerstones) and 141 sherds, indicate that the occupations of each are essentially the same — Middle Archaic, Late Archaic, Early Woodland (Black Sand) and Late Woodland (Maples Mills) — and therefore the samples from each have been combined in this analysis. However, a slight difference exists in that the West Matanzas site has produced several sherds of Havana Ware and (in one very restricted area of the site) five body sherds of a thick, unclassified type.

Projectile Points

Of the 162 identifiable projectile points collected the most common variety (31) is the type Raddatz Side Notched (Fig. 2 a-g) as defined by Wittry (1959a, 1959b). Their attributes, with the exceptions of percentage of convex bases and width to thickness ratios, compare quite favorably to points of this type from one or more of the sites Raddatz, Durst and Modoc (see Table 1). Although this point type, or at least similar side notched forms, was found at the lowest levels of Graham Cave (Logan, 1952: Pl. 6 a-b) and Modoc Rock shelter (Fowler, 1959: Fig. 7), with radiocarbon dates ranging from ca. 8000 to 7000 B. C., its maximum popularity appears to fall in the levels dated between 6000 and 3000 B. C.,

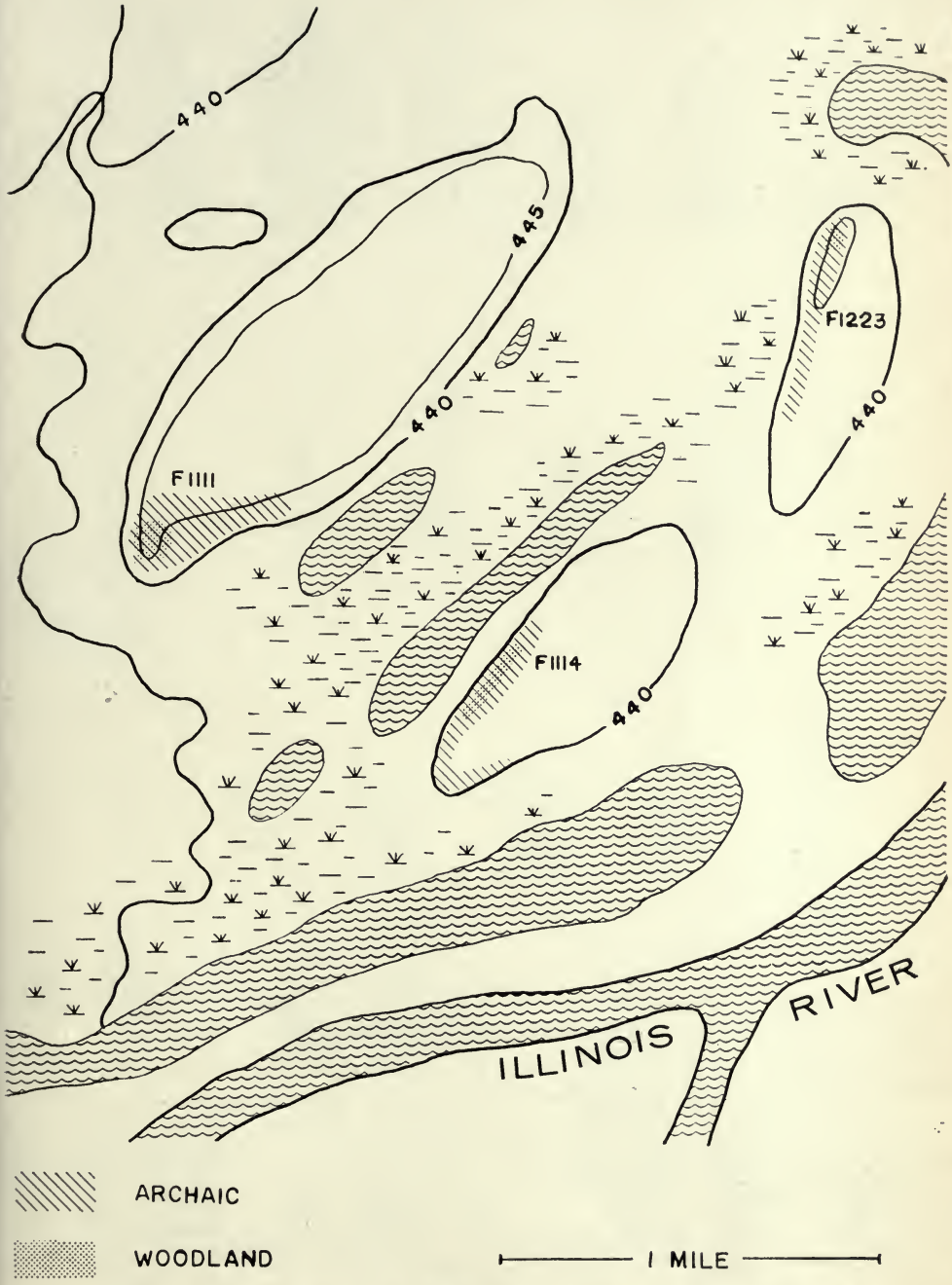

FIG. 1. Map of Sites and Physiography Prior to Modern Drainage. (ca. A. D. 1920).

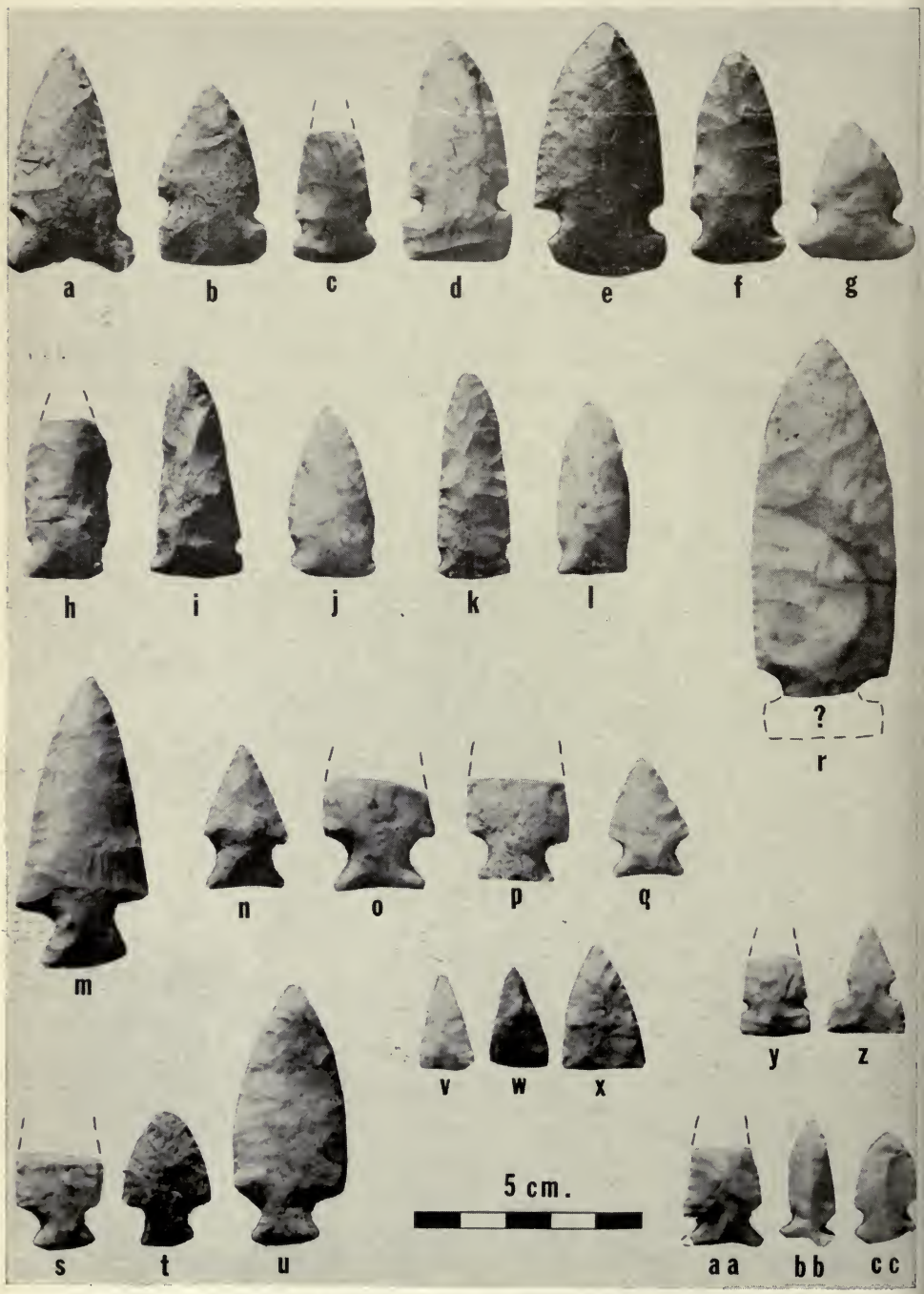

FIG. 2. Projectile Points. a-g, Raddatz Side Notched; h-l, "Matanzas Side Notched"; m-q, Motley Flared Base (?); r, Black Sand Notched (?); s-u, "Bottle-Neck" Points; v-x, Madison; y-z, Cahokia; aa-cc, "Flake Points".

or Middle Archaic, at Modoc (**ibid:** Fig. 14) and Raddatz (Wittry, 1959a: Table 1).

The second most common projectile point type (27 specimens) is a previously unclassified, shallow side notched, short stemmed point which we have tentatively named "Matanzas Side Notched" (Fig. 2 h-l). Attributes of this point are summarized and compared with Raddatz Side Notched in Table 1. Dating and affiliations are uncertain, but we suspect, on the basis of the low incidence of basal grinding and the association of the point at the Late Archaic Chrisman site [1] (McGregor, 1954: Fig. 17 e), that it is Late Archaic.

Represented by eight examples is another projectile point type, one of which (Fig. 2 m) is quite similar in shape and size to the Motley point illustrated by Bell (1958: Pl. 31). The somewhat smaller examples of this category (Fig. 2 n-q) conform more to those Motley Flared Base specimens illustrated by Winters (1963: Fig. 5 a) and Holland (1965: Fig. 1). It has been suggested that this projectile point might be an Early Woodland artifact (Winters, 1963: 42), and as such it might be associated with the Black Sand occupations of the sites.

Six specimens of the heavily basal and stem ground projectile point (Fig. 2 s-u) which has been called the "Bottle-Neck" point (Sellers, 1960; Converse, 1963: 111) have been recovered. Affiliations are uncertain, although a Late Archaic date might be suggested. It is almost surely not a "Hopewellian" artifact as has previously been suggested.

Several Madison points (Fig. 2 v-x) and two Cahokia points (Fig. 2 y-z) as defined by Scully (1951), and a few poorly executed flake points (Fig. 2 aa-cc) conforming to Cole and Deuel's (1937) Type 3 were recovered from the sites. Although the Cahokia points are normally considered to be Mississippian they are probably associated with the Late Woodland occupations at the sites, as are the Madison and flake points.

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[1] A radiocarbon date of 6490 + — 300 B. P. (M-485) obtained on shell from the Chrisman site is quite incompatible with the archeological materials, whereas the geological date of ca. 3000 B. P. suggested by M. M. Leighton (Crane and Griffin, 1958: 1119) is, we feel, much more acceptable.

Interestingly, in view of the rather sizable collection of Black Sand sherds recovered from the sites, the projectile point type "Black Sand Notched" as defined by Scully (1951) and White (1965) is represented by only one possible, fragmentary speciment (Fig. 2 r). Despite its name, the cultural association of this point type is far from certain. It should be note that in referring to the conglomeration of material (including the Black Sand point) assigned to the Black Sand component (Cole and Deuel, 1937: Fig. 28-29) it is stated that "There is also a possibility that the artifacts mentioned may be accidental inclusions, as similar objects were found scattered at random through the black sands." (op. cit.: 139).

TABLE I. Measurements (in millimeters), Ratios and Percentages of "Matanzas" and Raddatz Projectile Points

TYPE	Matanzas SN		Raddatz SN		Raddatz SN		Raddatz SN		Raddatz SN
SITE	F^V1111, etc.		F^V1111, etc.		Raddatz		Durst		Modoc
REFERENCE	---------		---------		Wittry, 1959a		Wittry, 1959b		Fowler, 1959
NUMBER OF SPECIMENS	(27)		(31)		(22)		(40)		(48)
	Range	Mean	Range	Mean	Range	Mean	Range	Mean	Mean
LENGTH	36-53	41	32-56	43	38-64	50	24-43	36	43 ± 9
WIDTH	16-22	20	17-29	23	16-34	26	15-44	24	26 ± 6
THICKNESS	5-10	8	6-11	9	7-11	9	5-10	8	8 ± 1
STEM LENGTH	7-10	8	10-18	13	8-17	13	6-18	11	------
WIDTH AT NOTCHES	10-19	15	14-21	17	14-22	18	12-31	17	------
LENGTH/ WIDTH	2.1		1.9		1.9		1.5		2.1
WIDTH/ THICKNESS	2.5		2.6		2.9		3.0		3.2
LENGTH/ STEM LENGTH	5.1		3.3		3.8		3.3		---
WIDTH/ WIDTH AT NOTCHES	1.3		1.4		1.4		1.5		---
STEM LENGTH/ WIDTH AT NOTCHES	.5		.8		.7		.6		---
% BASAL GRINDING	7		58		79		60		13
% STRAIGHT BASE	70		50		50		75		45
% CONCAVE BASE	15		17		38		10		42
% CONVEX BASE	15		33		12		15		13

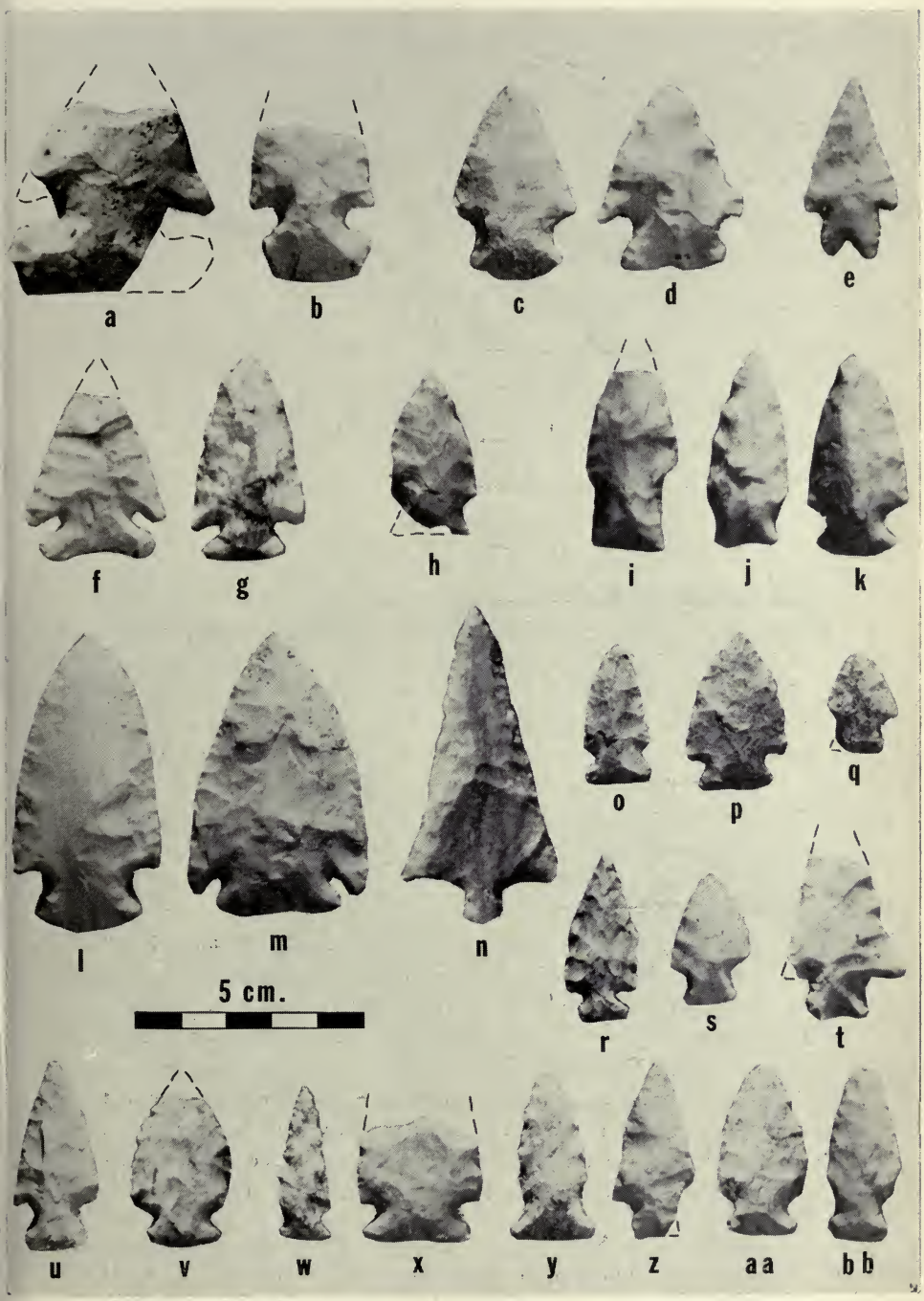

FIG. 3. Projectile Points. a-b, Thebes; c-d, Affinis Snyders; e, Bifurcate Base; f-g, Barbee Corner Notched (?); h, Lowe Flared Base (?); i-bb, Unclassified.

and this possibility is enhanced by the fact that Cole and Deuel did not recognize any Archaic occupations in the area.

Also recovered from the sites were two heavily basal ground, Early-Middle Archaic Thebes points (Fig. 3 a-b) as defined by Winters (n. d.); two heavily basal ground points (Fig. 3 f-g) which may relate to the Early-Middle Archaic Barbee Corner Notched (Winters, 1963: Fig. 3 h-j); several Affinis Snyders (Fig. 3 c-d; cf. Winters, 1963: Fig. 5 f); two Late Archaic (?) Bifurcate Base points (Fig. 3 e; cf. Fitting, 1964); a single expanding stemmed point (Fig. 3 h) similar to the Late Woodland Lowe Flared Base point of the Wabash Valley (Winters, 1963: Fig. 14); and a variety of other unclassified notched and stemmed points which are represented by only one to three examples (Fig. 3 i-bb).

Other Chipped Stone Artifacts

Contracting stemmed Dickson Broad Bladed knives (Fig. 4 a-d; cf. Winters, 1963: Fig. 5 b-d) are fairly well represented. Most of the specimens are probably of Late Archaic and Early Woodland affiliations (although this is only a typical Middle Woodland artifact). There is also one example of a Matanzas point reworked into a knife (Fig. 4 e) and a variety of lanceolate, rectanguloid and leaf-shaped knives (Fig. 4 k-n). Also well represented is the knife type usually referred to as a "turtle-back scraper" (Fig. 5 l).

The most common fleshing tools are the various types of hafted scrapers (Fig. 4 f-j), many of which have been reworked from projectile points. Most are probably associated with the Late Archaic and Early Woodland occupations. Also rather numerous are the thin Late Woodland end scrapers (Fig. 5 b-d), and a few side scrapers (Fig. 5 m) and thick "Havana" type scrapers (Fig. 5 a) have been found.

Numerous drills of a variety of types (Fig. 5 e-j), one chert adze (Fig. 5 k) and several choppers have been recovered. Notably absent are lamellar blades ("flake knives"), an artifact found in abundance on Middle Woodland sites.

Ground Stone Artifacts

With the exception of the numerous pebble manos the most common ground stone artifact is the well made three-quarters grooved ax (Fig. 6 a-b). A few full grooved axes (Fig. 6 c)

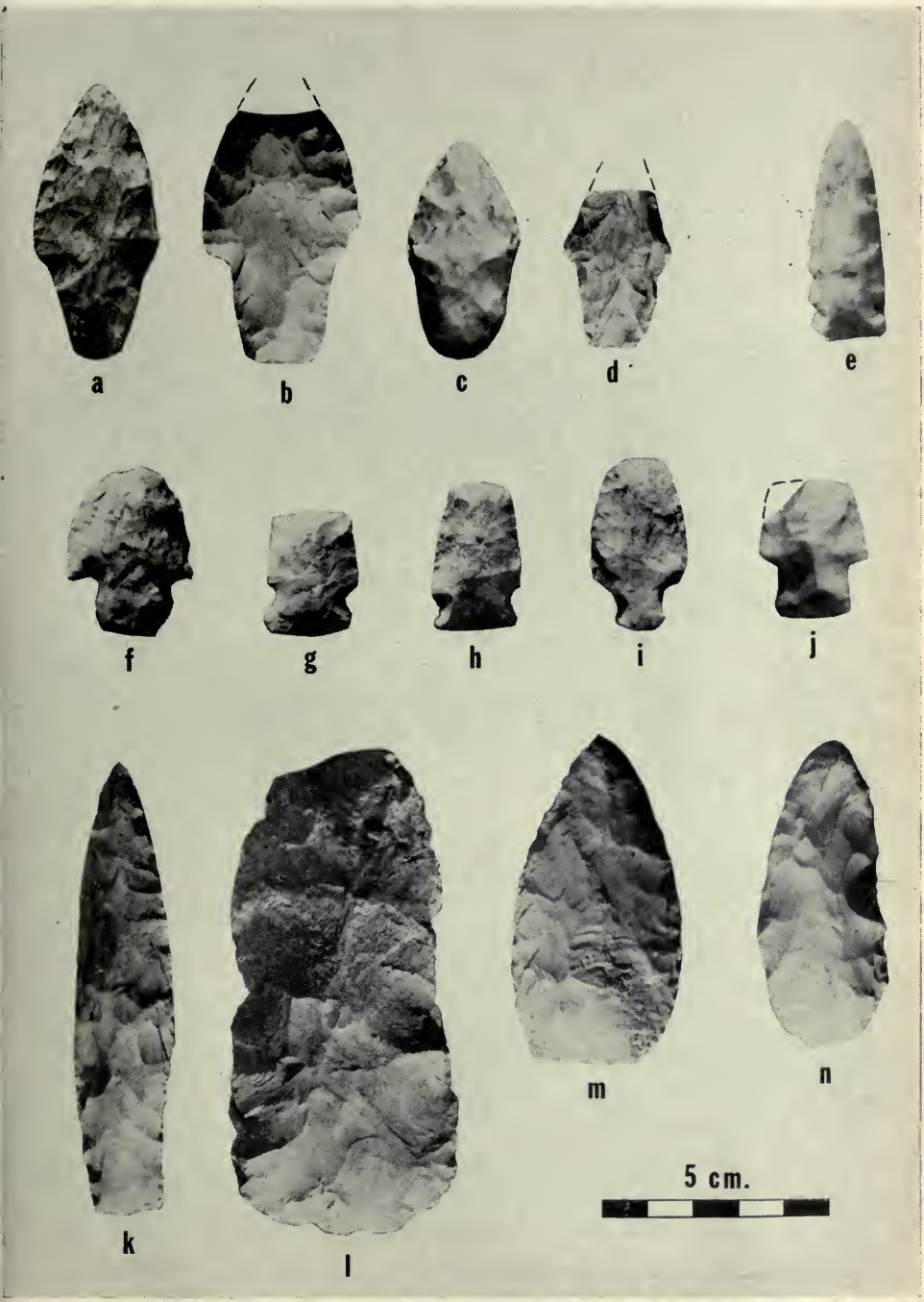

FIG. 4. Knives and Scrapers. a - d, Dickson Broad Bladed Knives; e, "Matanzas" Knife; f - j, Hafted Scrapers; k - n, Knives.

have also been found, but they are, without exception, much more poorly executed, are unbalanced and often exhibit the unaltered pebble surface over much of their surface. It is assumed that the full grooved axes are Middle Archaic and the three-quarters grooved specimens are Late Archaic.

Several celts have been found, these being typified by both

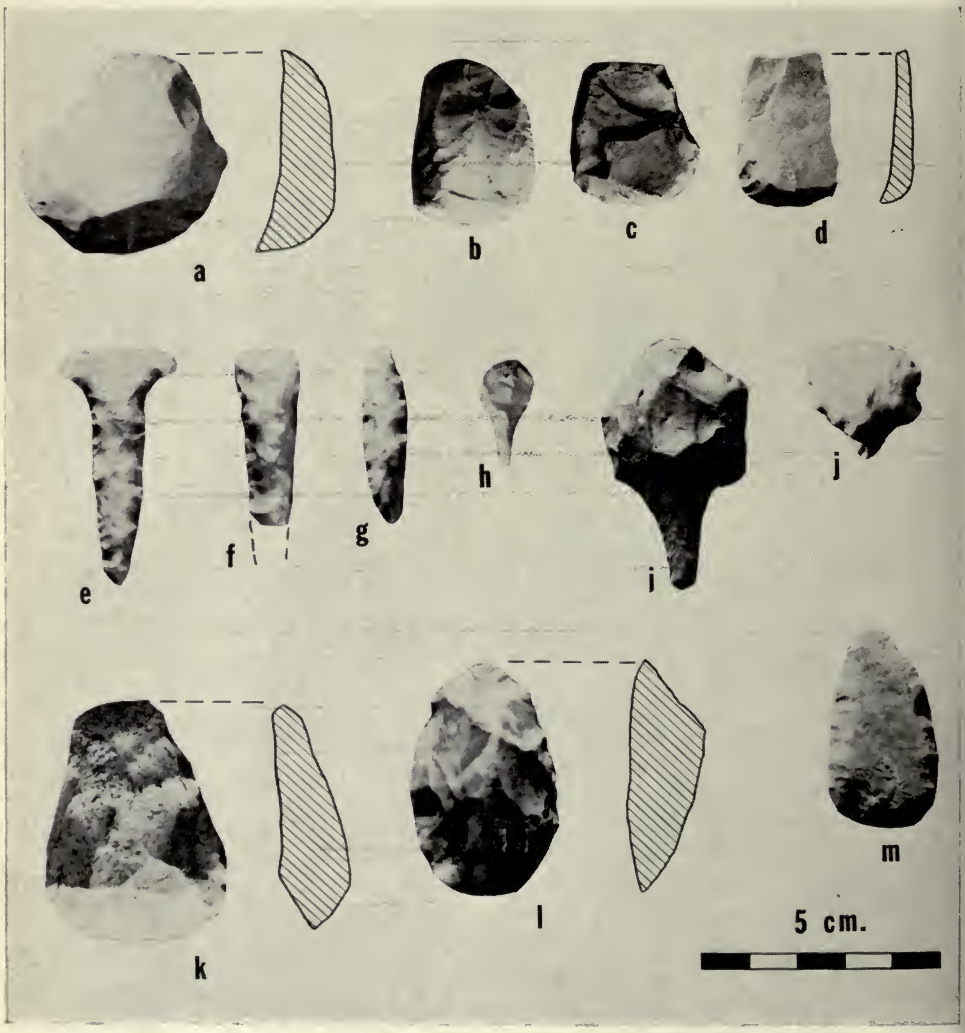

FIG. 5. Various Chipped Stone Artifacts. a, "Havana" Scraper; b - d, Thin End Scrapers; e - j, Drills; k, adze; l, "Turtle-Back Scraper" (knife); m, Side Scraper.

flat-based specimens with ovoid cross-sections and slightly flaring bits (Fig. 6 g) and flat, rectanguloid examples (Fig. 6 h). A single ground stone adze (Fig. 6 f) was recovered from the Richardson site.

Two fragmentary atlatl weights ("bannerstones") of banded slate are represented: a rectanguloid specimen with a flat-

FIG. 6. Ground Stone Artifacts. a - b, Full Grooved Axes; c, Three-Quarters Grooved Ax; d, Grooved Maul; e, Hammerstone; f, Adze; g - h, Celts; i, Metate.

tened lozenge-shaped cross-section (Fig. 7 a) and a "crescent" example (Fig. 7 b). Both of these Middle (?) – Late Archaic artifacts have been altered from their original form. The rectangular specimen had been broken through the length of the bore and the broken edges ground completely smooth. How this object was utilized in this condition is unknown. The second specimen is a fragment which has been intentionally broken, there being two deep grooves cut on the opposing faces along the line of fracture. Possibly one wing of the weight was accidentally broken and the opposite wing (this specimen) was intentionally removed for balance.

A unique artifact is a lens or discus shaped (lenticular solid) object of white quartzite (Fig. 7 d) from the Lone Barn site. Perhaps this is a modification of the more familiar Late Woodland – Mississippian discoidal.

Also represented are grooved mauls (Fig. 6 d), some of which are reworked broken axes, chert and quartzite hammerstones (Fig. 6 e), a single sandstone slot abrader, one drilled pebble pendant (Fig. 7 c), several "boulder" metates (Fig. 6 i), and a number of faceted fragments of hematite.

Pottery

The 141 sherds are divisible into four major categories: 43 Early Woodland (primarily Liverpool Ware), 90 Late Woodland (primarily Canton Ware), 3 Middle Woodland (Havana Ware), and 5 thick, unclassified sherds.

Liverpool Ware is the name applied by Fowler (1955) to the pottery characteristic of the Early Woodland Black Sand complex. The sherds of this complex collected from the three sites (Fig. 8) are fairly well duplicated by Cole and Deuel (1937: Pl. 1:1-6) and Griffin (1952: Pl. 28). Typically the sherds are cordmarked (with the decoration, if present, being applied directly over the unaltered cordmarked surface) and tempered with minor quantities of small fragments of angular grit. The characteristic, extremely sandy texture of the pottery may be the result of the intentional utilization of sand for temper or of the use of naturally sandy clay for paste. Thickness of the body sherds varies from 6 to 12 mm. with an average of 8 mm., and the rims, at a point 10 mm. below the lip, range in thickness from 6 to 8 mm. and average 7 mm.

Rims are usually slightly extruded, often with cord-wrapped stick stamping on the interior rim-lip area (cf. Fig. 8 a, c). Cordmarks approach the lip diagonally from lower left to upper right and incising (if present) is either horizontal (Fig. 8, b, d) or diagonal from lower right to upper left (Fig. 8 c). Nodes are present on 57 percent of the rims and the distance from the center of the node to the lip varies from 20 to 25 mm.

One rim sherd (Fig. 8 e), however, although having the typical sandy texture, does not conform to this pattern. The cordmarks proceed in the opposite direction (lower right to upper left), and the sherd has plain stamping on the interior rim-lip, a horizontal row of linear punctates and is without

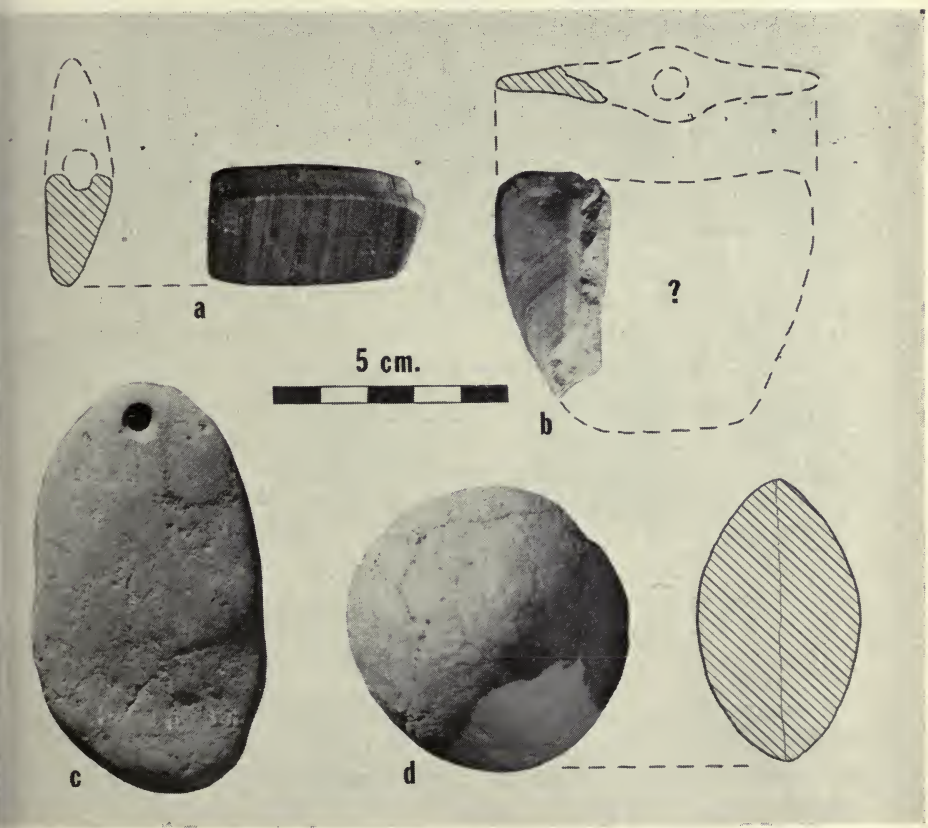

FIG. 7. Ground Stone Artifacts. a-b, Atlatl Weights; c, Pebble Pendant; d, Lenticular Solid of Quartzite (partly restored).

nodes. As such the sherd tends toward (or perhaps is) Sisters Creek Punctated.

Thirty-three percent of the body sherds are cordmarked with no decoration and one sherd has a single cord-impression over a cordmarked surface (Fig. 8 n). Decorations in the form of wide, close-spaced, parallel incising (Fig. 8 g), wide, "haphazard" lines (Fig. 8 j), herringbone patterns (Fig. 8 h-i), or fine-line incisions (Fig. 8 k; cf. Griffin, 1952: Pl. 28 j) are present on 40 percent of the sample.

Present in this collection, but not represented in the samples illustrated by Cole and Deuel (1937) and Griffin (1952), are four fingernail punctated sherds. The crescent-shaped punctations are arranged in rows and are usually in conjunction with incised lines (Fig. 8 l-m). There are also two sherds which have been decorated by "gouging" with the fingernail so that a noticeable ridge has been pushed up giving them somewhat of a pinched appearance (Fig. 8 f). Although one of these sherds has a sandy paste typical of Liverpool Ware the other, having a smooth, non-sandy texture, is quite different. Also present are four very sandy but plain surfaced (or heavily smoothed-over and slightly eroded) body sherds, the precise relationship of which is uncertain, although they possibly represent somewhat aberrant Havana Ware rather than Liverpool Ware.

Ninety Late Woodland (Maple Mills) sherds were recovered, most of which conform fairly well to the category Canton Ware as define by Fowler (1955). Exterior surfaces of all sherds exhibit smoothed-over cordmarking, the smoothing occasionally being so intensive that the surface almost appears plain (cf. Fig. 9 d). Body sherds vary from to to 8 mm. in thickness averaging 5.5 mm., and rim sherds range from 4 to 6 mm. and average 5 mm. in thickness at a point 10 mm. below the lip.

The most typical decoration is horizontal, parallel cord-impressions on the rim with either diagonal cord-impressions across the lip (Fig. 9 a; cf. Cole and Deuel, 1937: Pl. 3:2) or a single continuous cord-impression along the lip surface (Fig. 9 b; cf. Schoenbeck, 1946: Fig. 1:7). No complete rim sherds exhibiting triangular panels of cord-impressions have been re-

FIG. 8 Early Woodland Pottery.

covered, but two shoulder sherds apparently exhibit this design.

This assemblage, however, differs from typical Canton Ware in that the majority of the sherds are gray in color (rather than reddish-brown), and there is a fairly low incidence of sherds tempered with black angular grit, many of the sherds being tempered with white angular grit (quartzite?), grog (crushed sherd) or crushed granite. Further, several decorative elements are presnt which are not typical of Canton Ware. These include a rim sherd with exterior cord-wrapped stick stamping (Fig. 9 c) reminiscent of Weaver Ware decoration,. and two rims with interior stamping — cord-wrapped stick (Fig. 9 f) and hemiconical, Stueben-like punctates (Fig. 9 d). A cordmarked body sherd with crescent-shaped punctates along the shoulder (Fig. 9 e) is related to the pottery associated with the Late Woodland manifestations in the Brown County — Quincy, Illinois area.

The Havana Ware sherds are represented by two plain

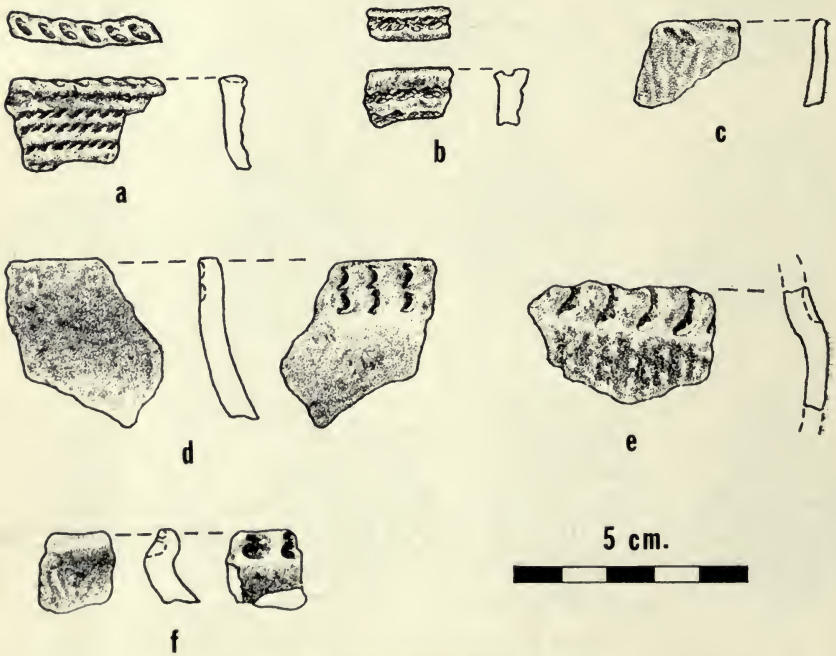

FIG. 9. Late Woodland Pottery.

surfaced, undecorated body sherds 7 mm. in thickness and one undecorated smoothed-over cordmarked body sherd 6 mm. in thickness.

The five unclassified body sherds, which apparently represent a single vessel, are fairly thick (10-11 mm.); have reddish-brown, heavily smoothed-over cordmarked exterior surfaces and black, poorly smoothed interior surfaces; have abundant temper in the form of angular fragments of crystalline rock up to 6 mm. in diameter; and the sherds laminate and crumble badly. Except for the extent of smoothing of the exterior surface and the absence of apparent interior cordmarking the sherds most resemble the Early Woodland type Marion Thick. However, the two non-conforming attributes tend toward Havana Ware, and as such the sherds seem to represent an intermediary type between Marion Thick and Havana Ware — but they are in no way similar to Liverpool Ware, the pottery which is usually considered to be intermediary.

The Havana Ware sherds are represented by two plain surfaced, undecorated body sherds 7mm. in thickness and one undecorated smoothed-over cordmarked body sherd 6 mm. in thickness.

Raw Materials and Trade

The majority of the chipped stone artifacts are made from cherts immediately locally available in the Pleistocene terraces and glacial drift. However, two Affinis Snyders projectile points, one unclassified corner notched point, two fragmentary points, one hafted scraper and one Dickson Broad Bladed knife were manufactured from smooth, pinkish Crescent chert obtainable from quarries in St. Charles County, Missouri. Also represented is an expanding stemmed Lowe-like point, two fragmentary points and one waste flake of the blue-gray Dongola chert from southern Illinois.

All of the materials utilized for the ground stone artifacts, including the banded slate and hematite, are present in the local Pleistocene deposits.

Settlement

The location and extent of the areas utilized by the various occupations are somewhat different at each of the three sites. The Richardson site, which is located at the southwestern tip

of a terrace remnant, has Archaic materials scattered more-or-less continuously over a roughly triangular 15 acre area, whereas the Early and Late Woodland artifacts are restricted to a one acre area on a very sandy knoll on the western margin of the terrace.

The West Matanzas site, which is located on a similarly shaped but slightly lower terrace, differs in that the Archaic occupations extend in a band about 100 feet wide for approximately 2000 feet along the crest of the sandy western margin of the terrace and the Woodland materials are found over about half of this expanse. The Lone Barn site also differs in that the Archaic materials are again distributed in a linear 100 by 2000 foot area along the sandy western terrace margin while the Woodland occupations are confined to a one-half acre area at the highest and sandiest portion of the ridge in a manner similar to Richardson (see Fig. 1).

Because of the extent and apparent intensity of Archaic occupations at these sites and because they represent the largest Archaic sites in the area,[2] it is tempting to suggest that they represent Archaic "settlements" as defined by Winters (1963: 33). However, it is possible that rather than representing fairly large, intensive occupations the sites represent a number of small, temporarily utilized areas which were established at different times at slightly different locations along the terrace margins. The fact that the three sites are in such proximity and are so similar in artifactual remains supports this possibility.

The characteristics of the Black Sand occupations are typical of sites of this complex in this area. Sites are small (ca. one acre), have light concentrations of refuse and are situated on low terraces, alluvial fans or natural levees (usually very sandy) along the Illinois River or backwaters of that stream (Liverpool, the Black Sand type-site, is also located on the sandy Beardstown Terrace and is approximately one-fourth

[2] Other Middle and/or Late Archaic sites in the area, found scattered along the river terraces and alluvial fans, bluffs and small creeks, are much smaller (one acre or less), have much lighter concentrations of refuse and produce proportionately different combinations of functional artifacts (a situation undoubtedly reflective of different economic activities).

mile from the present bank of the Illinois River). The smaller stream valleys, including Spoon River, and the bluffs and prairies were apparently not utilized (for site locations) by these peoples.

The Maple Mills components represent elements of what appears to be a rather complex settlement pattern. All sites located to date are small (**ca.** one acre) and have very light concentrations of refuse. The physiographic zones utilized for site locations by these people were quite diverse — sites being found along small prairie streams, bluff tops, river terraces, natural levees and even the floodplains and riverbanks of the major streams. The role played in this system by the three sites considered herein is not yet understood.

It is noteworthy that neither Paleo-Indian artifacts nor artifacts exclusively associated with Early Archaic were recovered from these sites (nor from any other sites on the Beardstown Terrace of which we are cognizant). There is some evidence to suggest that the terrace might be correlated with (**i. e.** formed by) outlet water during the Lake Algonkian maximum dated **ca.** 8500 B. P.; and, if this correlation is correct, the terrace was not in existence (or at least was unoccupiable) prior to Middle Archaic times.

REFERENCES CITED

Bell, Robert E.
1958 "Guide to the Identification of Certain American Indian Projectile Points," **Special Bulletin of the Oklahoma Anthropological Society**, No. 1.

Cole, Fay-Cooper, and Thorne Deuel
1937 **Rediscovering Illinois**, University of Chicago Press.

Converse, Robert N.
1963 "Ohio Flint Types," **Ohio Archaeologist**, V. 13, No. 4, pp. 72-120.

Crane, H. R., and James B. Griffin
1958 "University of Michigan Radiocarbon Dates III," **Science**, V. 128, pp. 1117-1123.

Fitting, James E.
1964 "Bifurcate-Stemmed Projectile Points in the Eastern United States," **American Antiquity**, V. 30, No. 1, pp. 92-94.

Fowler, Melvin L.
1955 "Ware Groupings and Decorations of Woodland Ceramics in Illinois," **American Antiquity**, V. 20, No. 3, pp. 213-225.
1959 "Summary Report of Modoc Rock Shelter," **Illinois State Museum Report of Investigations**, No. 8.

Griffin, James B.
1952 "Some Early and Middle Woodland Types in Illinois," in **Hopewellian Communities in Illinois**, Thorne Deuel (ed.), pp. 95-129, **Illinois State Museum Scientific Papers**, V. 5.

Holland, C. G.
1965 "An Archeological Survey of the Oakley Reservoir," **Illinois State Museum Preliminary Reports**, No. 5.

Logan, Wilford D.
1952 "Graham Cave, An Archaic Site in Montgomery County, Missouri," **Memoir of the Missouri Archaeological Society**, No. 2.

McGregor, John C.
1954 "The Chrisman Site, Illinois River Valley Archaic Culture," **Journal of Illinois Archaeological Society**, n. s., V. 4, No. 1, pp. 13-21.

Schoenbeck, E.
1946 "Cord-Decorated Pottery in the General Peoria Region," **Transactions of the Illinois State Academy of Science**, V. 39, pp. 33-42.

Scully, Edward G.
1951 "Some Central Mississippi Valley Projectile Point Types," Museum of Anthropology, University of Michigan. (Mimeographed).

Sellers, Paul V.
1960 "Vase-Shape or Bottle-Neck Type Flint Points," **Central States Archaeological Journal**, n. s., V. 7, No. 3, pp. 114-115.

Wanless, Harold R.
1957 "Geology and Mineral Resources of the Beardstown, Glasford, Havana and Vermont Quadrangles," **Illinois State Geological Survey Bulletin**, No. 82.

White, Anta M.
1965 "Les Industries Lithiques de la Vallee de l'Illinois a l'Eqoque Woodland," Unpublished Ph. D. Dissertation, University of Michigan.

Winters, Howard D.
1963 "An Archaeological Survey of the Wabash Valley in Illinois," **Illinois State Museum Report of Investigations**, No. 10.
n. d. "Projectile Points of the Cache River Valley," Unpublished Manuscript.

Wittry, Warren L.
1959a "The Raddatz Rock Shelter, Sk. 5, Wisconsin," **Wisconsin Archeologist**, n. s., V. 40, No. 2, pp. 33-69.
1959b "Archeological Studies of Four Wisconsin Rockshelters," **ibid**, n. s., V. 40, No. 4, pp. 137-267.

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THE WISCONSIN ARCHEOLOGIST

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THE KOUBA SITE: PALEO-INDIANS IN WISCONSIN

Robert Ritzenthaler

Milwaukee Public Museum

In March 1966, Mr. Theodore Kouba brought to the Milwaukee Public Museum a collection of stone artifacts obtained over three decades by surface hunting on a 40 acre farm in eastern Dane County. Included were seven fluted points, some 149 gravers, and 77 end scrapers. Typologically similar assemblages have been reported for a number of Paleo-Indian sites in the east: the Bull Brook Site in Massachusetts (Byers, 1953), the Reagen Site in Vermont (Ritchie, 1953), and the Shoop Site in Pennsylvania (Witthoft, 1952).

Paleo-Indian culture, one of the earliest known for North America, was first discovered in the Southwest. Fluted points of the Clovis and Folsom types were found in New Mexico in association with ice age mammals such as mammoth and extinct bison. Folsom is dated at 8000 B. C., Clovis at least 9000 B. C. The Paleo-Indian sites of the eastern seaboard seem somewhat more recent. Bull Brook has been radiocarbon dated at ca. 7000 B. C. The Eastern sites consist thus far only of surface finds, but it is probable that these Indians also hunted the Pleistocene bison and mastadon, although the archeological evidence for this is yet to be found.

The first Late Paleo-Indian site reported for Wisconsin was by Robert Nero (1955). The evidence consisted of surface collections from the Havey Site in eastern Dane County and not far from the Kouba Site. Among the artifacts were two fluted point fragments, 83 gravers, and 146 end scrapers, an assemblage similar to that reported for Paleo-Indian sites on the eastern seabord. A variety of other chipped-stone artifacts were found, some perhaps of Paleo-Indian origin, but others representing later horizons.

FIG. 1. Paleo-Indian Points. Upper row: Folsomoid type, 3 Clovis. Loked: 3 fluted Daltons, 2 unfluted Daltons.

The first Late Paleo-Indian site reported for Wisconsin was an Eden-Scottsbluff burial, the Renier Site in Door County, by Mason and Irwin (1960). Eden and Scottsbluff points are varieties of a category termed "Plano" on the western Plains where they are dated at somewhat later than the fluted point tradition. Mason and Irwin suggest a date of 6500 to 4000 B. C. for the Renier Site.

The Kouba Site is the second Early Paleo-Indian site to be reported for Wisconsin. Mr. Kouba prefers not to reveal its precise location at this time, but there is no doubt as to the authenticity of the site and its materials. The artifacts were

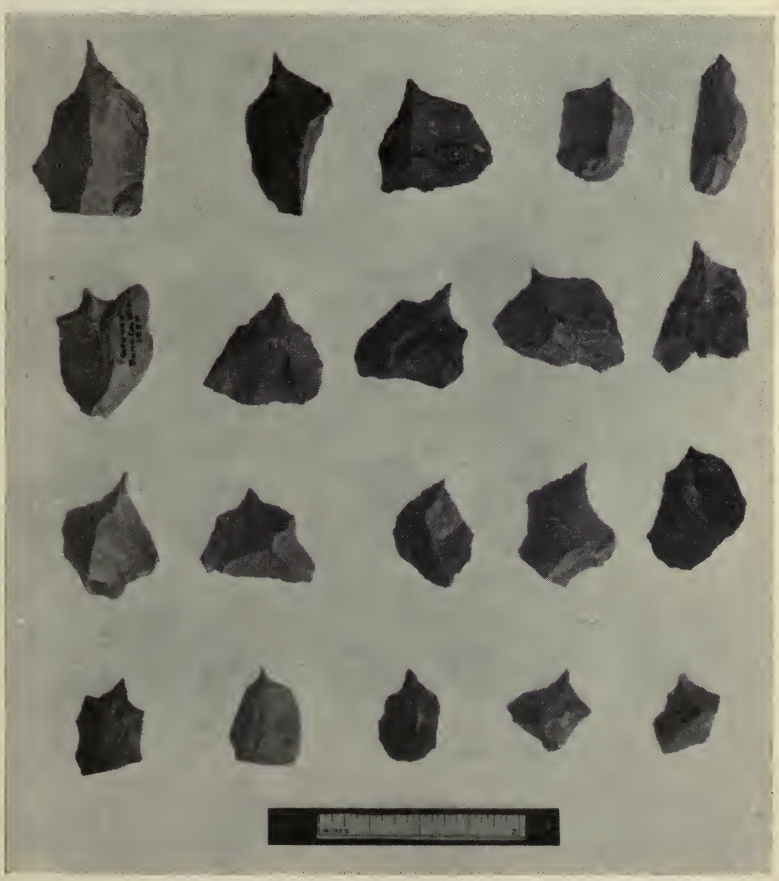

FIG. 2. Simple Gravers.

FIG. 3. Gravers with Mutiple Tips.

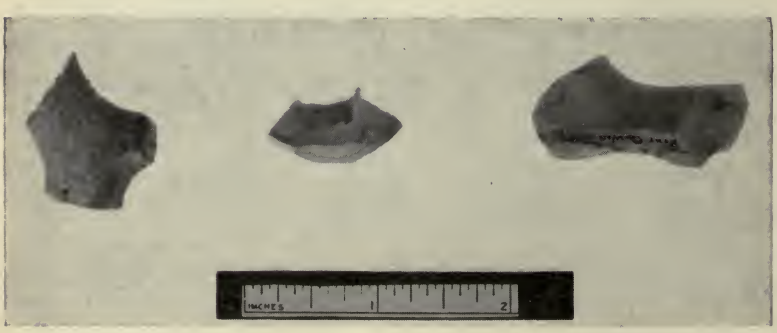

FIG. 4. Graver-spokeshaves.

found on the surface, but Mr. Kouba, who has some knowledge of soils, reports that they occurred in sub-soil, and believes that they once lay several feet below a former surface since removed by erosion. This is a comparable condition to that at the eastern sites, for example Bull Brook, where "the artifact bearing zone has been unstable and subjected to disturbance over a long period of time" (Byers, p. 276).

The Kouba Site Assemblage

The diagnostic artifact of the Paleo-Indian complex is the fluted point characterized by having a long flake (or flute) removed from one or both surfaces off the central base. Seven such points were recovered at the Kouba Site. They are of chert with flutes on both surfaces, and show basal grinding, i. e. the edges at the basal end were smoothed, presumably to reduce cutting of the binding elements used to secure the point to the shaft. One is a Folsomoid type (Fig. 1 upper row left) with a flute extending nearly to the point; the next three shown are Clovis types. The lower row shows three Dalton types characterized by serrate edges and a distinct change of edge

FIG. 5. Graver-scrapers.

contour toward the base, and two unfluted Daltons.

Another distinctive artifact of the Paleo-Indian complex is the graver, a unifacial tool with a tip presumably used for the engraving or incising of bone, shell, or wood. The Kouba Site produced a total of 149 gravers. Of these, 96 were simple gravers made from a chert flake unworked except for an engraved tip formed by rather fine, delicate pressure flaking (Fig. 2). Six of these had more than one tip (Fig. 3). The others were multipurpose tools such as six specimens with graver tips plus concave spokeshave edges (Fig. 4). Besides these graver-spokeshaves there were 46 graver-scrapers (Fig. 5) with one or more usually curved scraping edges, in one case stemmed for hafting.* Seven graver-knives are so designated because each has a straight, sharp, although usually unworked cutting edge (Fig. 6). It might be noted that, in contrast to the eastern seaboard sites where gravers are relatively rare, the Wisconsin sites have produced large numbers of them . . . Kouba 149, Havey 83.

End scrapers are another characteristic tool of the Paleo-Indian assemblage. A total of 77 were found at the Kouba

* This and two adjoining specimens (top row) are bifacially worked and the question may be raised as to whether or not they should be considered gravers.

FIG. 6. Graver-knives.

Site, nearly all of chert, and characterized by one end having been chipped to form a convex scraping edge. Three types may be distinguished. The snub-nosed type was made from

FIG. 7. End Scrapers.

a short, thick flake rising abruptly from the scraping edge to a peak, with a downward slope to the opposite end (Fig. 7, top row). A second type has a gradual taper from scraping edge up to a peak with a slope to the opposite end (second row), and in the third case the flake is of approximate equal

FIG. 8. Side Scrapers.

thickness from front to back (third row). The snub-nosed variety has been found associated with the fluted point complex in the Southwest (Lindenmeier Site) and in the eastern sites. Whether the other types from the Kouba Site also belong is not certain.

Fluted points, gravers, and snub-nosed scrapers are well established members of the Paleo-Indian assemblage. Some of the other Kouba Site artifacts may belong to it, others certainly do not. It is uncertain, for example, whether the side scrapers are part of it, although side scrapers of various types occur in Paleo-Indian sites. Of the 44 side scrapers (Fig. 8) from the Kouba Site three are quartzite, the others chert. Nine are bifacially worked, the others consist of unifacially worked flake (usually large) with one or more scraping edges. Twelve were flaked completely around the perimeter.

FIG. 9. Flake Knives.

FIG. 10. Drills.

Six chert flake knives were found (Fig. 9). They were made from a rather small flake with a curved or straight cutting edge produced by secondary chipping. Flake knives are found at all Paleo-Indian sites and there is little doubt that they belong to the assemblage.

While drills occur at other Paleo-Indian sites they are generally believed not to be affiliated with the fluted point complex. A variety of types is represented in the 28 drills from the Kouba Site (Fig. 10). Most common (15) have an expanding base . . . a flaring out of the edges toward a convex or straight base. There are also four of the T-shaped variety, three are stemmed, one is side-notched.

Of the wide variety of non-fluted points found only the Agate Basin type is definitely early. The Kouba Site produced one complete point and five basal fragments (Fig. 11). They are straight based, lanceolate in shape, and show considerable basal grinding. The horizontal flaking characteristic of Agate Basin points of the western Plains is apparent on only several of the Kouba specimens. In the west, Agate Basin has been dated as early as 7,000 B. C. (Robert Bell, personal communication).

None of the other points from the site have the Paleo-Indian edge grinding, fluting, or shape typology, and it is fairly certain that they belong to later horizons. Included in this category are:

11 — Madison side-notched, short-tanged points with concave, convex, or straight bases (Fig. 12)
9 — side-notched concave based points (Fig. 13)
7 — Durst Stemmed points (Fig. 14)
4 — concave-based lanceolates (Fig. 15 upper)
4 — straight-based ovates (Fig. 15 middle)
4 — trianguloids with concave bases. Sharkstooth shape. (Fig. 15 lower)
2 — short and wide with concave base (Fig. 16)

The cultural affiliation of these is not clear, except for the Madison Side-notched and Durst Stemmed which are Late Archaic-Early Woodland.

Other than chipped-stone artifacts the site produced two hammerstones, and one ground stone object . . . a flat-backed

FIG. 11. Agate Basin Points.

gorget with two perforations (Fig. 16). The gorget would fall into a Late Archaic horizon, the hammerstones cannot be culturally or temporaly identified.

Both Kouba and Havey are multi-component sites, but there is no doubt that a Paleo-Indian component is represented at each. Neither site has yielded material suitable for radiocarbon analysis, so dating is impossible at this point. The date of 7000 B. C. obtained at Bull Brook will serve as a provisional one for the Wisconsin sites until other evidence is forthcoming.

While these are the only Paleo-Indian sites thus far recorded for Wisconsin, there are certainly others in the state. The relatively large number of fluted points from the Mud Lake area in Dodge County suggests a probable site in that area. Mr. Robert Hruska has assembled evidence for another in Calumet County, to be reported upon in a future issue.

Because of lack of mounds or other surface features Paleo-Indian sites are difficult to locate and observable only from the presence of concentrations of surface artifacts or in areas disturbed by man or nature. The lack of knowledge as to what constitutes the Paleo-Indian assemblage has also inhibited the reporting of such sites. In all of the vast region east of the Mississippi River there are less than a dozen known sites,

FIG. 12. Madison Side-notched Points.

FIG. 13, Side-notched, concave based Points.

FIG. 14. Stemmed Points. Upper two rows: Durst Stemmed. Lower: Wide Stemmed Trianguloids.

and these have all been reported only since 1952. Yet the rather considerable number of fluted points in museums and private collections indicates that the Paleo-Indian was wide spread in this area and apparently much more populous than in the Southwest. It will be interesting to watch the unfolding of this early man phase of American prehistory. *

* A preliminary article on the Kouba Site was submitted to **American Antiquity** in May 1966. Since then more of the collection has been made available, and this article covers a more complete inventory. Even this is not a complete inventory. Mr. Kouba informs me that over 70 specimens including 22 gravers have been given away.

BIBLIOGRAPHY

Byers, Douglas S.
1955 Additional Information on the Bull Brook Site, Massachusetts. **American Antiquity**, Vol. 20, No. 3, pp. 274-6. Salt Lake City.

Mason, Ronald J. and Carol Irwin
1960 An Eden-Scottsbluff Burial in Northeastern Wisconsin. **American Antiquity**, Vol. 26, No. 1, pp. 43-57. Salt Lake City.

FIG. 15. Points. Upper: Concave-based Lanceolates. One at left with edge grinding. Middle: Straight-based Ovates. Lower: Concave-based Trianguloids.

Mason, Ronald J.
1962 The Paleo-Indian Tradition in Eastern North America. **Current Anthropology**, Vol. 3, No. 3, pp. 227-46.

Nero, Robert
1955 Surface Indications of the Possible Early Archaic Camp-site in Wisconsin. **The Wisconsin Archeologist**, Vol. 36, No. 4, pp. 128-46.

Ritchie, William A.
1953 A Probable Paleo-Indian Site in Vermont. **American Antiquity**, Vol. 18, No. 3, pp. 249-58. Salt Lake City.

Witthoft, John
1952 A Paleo-Indian Site in Eastern Pennsylvania. **Proceedings American Philosophical Society**, Vol. 96, No. 4, pp. 464-95. Philadelphia.

FIG. 16. Short and Wide Concave-based Points. Gorget.

ONEOTA SETTLEMENT PATTERNS AND AGRICULTURAL PATTERNS IN WINNNEBAGO COUNTY

G. Richard Peske

Wisconsin State University — Oshkosh

INTRODUCTION

Winnebago County has an environment which supported numerous Indian settlements in the past as is evidenced by the Wisconsin Archeological Codification File which contains data on 104 sites in the county (Hurley, 1965). Lake Winnebago, the Wolf River, and the Fox River with its associated shallow lakes afforded the prehistoric district peoples with large quantities of fish, molluscs, waterfowl, and wild rice. Ecologically, the region is in a biotic tension zone (Curtis, 1959), so that the faunal and floral communities are made up of species from the Northern Conifer-Hardwood Forest, the Southern Hardwood Forest, the Oak Savanna, and the Prairie. Thus, the environment had a great potential for subsistence exploitation. During the 500 years prior to historic contact with the French, the Lake Winnebago Region was primarily inhabited by Oneota groups which are archeologically represented by the Lake Winnebago Focus (probably prehistoric Winnebago Indians) and the Grand River Focus (McKern, 1945). This paper consists of data and interpretation derived from three Lake Winnebago Focus sites: Lasley's Point, Eulrich, and Furman. The author has excavated portions of all three sites during the seasons of 1964 to 1966. The 1964 field season at Lasley's Point was supported by a National Science Foundation Grant GS-433 from the Social Sciences Division of NSF. The field work and laboratory analysis of the Eulrich and Furman Sites was partially supported by Wisconsin State University Oshkosh and the Oshkosh Public Museum.

At the present, Winnebago County has a continental climate which in conjunction with the soils types, supports corn-beans-squash agriculture. The growing season of these crops is aided by a rainfall which is heaviest in June and lightest in August (Wisconsin Climatological Data, 1961). The county also has an average of 140-160 consecutive frost-free days per year which is a prerequisite for productive corn agriculture;

a lesser amount of frost-free days is hazardous to corn agriculture. (see Yarnell, 1964, map 4).

On the basis of the ecology offering a great potential for subsistence in the realm of wild foods and cultigens and with the presence of Oneota culture which is a part of the Mississippi Tradition, it is a safe assumption that the Oneota archeological remains should reflect a culture which is more advanced in terms of contrast to the Northern Algonkian groups (e. g., Menominee, Chippewa, etc.) in terms of a greater population size, villages which are larger and more permanent, a larger food surplus, and an overall ecological adaption which would support more people.

SETTLEMENT PATTERNS AND AGRICULTURAL PRACTICES

Lasley's Point: This site has a long history of excavation. It was originally reported by Publius V. Lawson (1902) and partially excavated in the 1930's and 1940's by Arthur P. Kannenberg of the Oshkosh Public Museum (Bullock, 1942a, 1942b). In 1964 it was revisited and excavated by G. Richard Peske (1965a, 1965b). Richard A. Yarnell (see p. 196, this issue of the Wisconsin Archeologist) and Hugh C. Cutler (Personal Communication) have analyzed and identified the charred plant remains from the site. In addition, Charles E. Cleland has identified the faunal remains.

Lasley's Point is divided spatially into two site areas which are designated at 47Wn8 and 47Wn96. These two areas are separated by approximately a quarter of a mile of sterile land. Wn8 was worked only by Peske and is adjacent to the shore of Lake Winneconne. Three 5' by 10' excavation units and surface survey indicate that this site area was the village and cemetery. Time, money, cottages, and farms did not permit us to follow out post molds and features or to delineate all the boundaries of the site. The features consist of numerous post molds from which no patterns were discernible, small refuse pits which are basin shaped or irregular, and two burials. The first burial was "excavated" by a bulldozer during the construction of a barn; it contained a male and female adult and an adolescent child along with two Lake Winnebago Focus vessels which were partially reconstruct-

able. The second burial, excavated by Peske, contained a partially flexed adult male with an extended infant one foot away from his feet. Above these inhumations were 3 limestone slabs and adjacent to the left pelvis of the adult was placed one half a vessel containing one mollusca valve. The vessel is Lake Winnebago focus, has two strap handles, and shows wear along the broken edges from possible use as a scoop.

Wn96 is situated inland from Wn8 and covers approximately 40 acres of land. Kannenberg's excavations in this area indicate a multi-component site; unfortunately, almost all of his materials lack provenience data other than the site number. The pottery he excavated ranges from Early Woodland to Late Woodland and also includes Lake Winnebago Focus sherds which represent 95% of the pottery. Peske's excavations produced only Oneota materials which have been carbon dated at A. D. 990, 1170, and 1270 (Baerreis and Bryson, 1966). Wn96 differs from Wn8 in that there are no known Lake Winnebago Focus burials, no post molds, and no refuse pits. The cultural materials are concentrated into large refuse heaps and interspersed between and on top of the refuse heaps are linear, convoluted features termed "garden beds". The refuse heaps which are referred to as mounds in the earlier reports, are one to two feet high and range up to 2500 square feet in area. Fifty-five "mounds" have been identified at Wn96 but most of these have been entirely excavated by Kannenberg or amateur collectors. They are unstratified and are composed of sherds, chert flakes and cores, chert projectile points and scrapers, broken bone tools, animal bone, shell, flakes of copper, charcoal, and large quantities of rock in pebble and cobble form.

The function of these refuse heaps appears to be that of a garbage dump for discarding debris from the village site (Wn8) and from the gardening activities. The mollusca bivalves occur in small concentrations indicating basket transport from another area. Frequently the shells are found with the valves articulated and the clam being placed inside a larger clam. Occasionally 5 or 6 clams may be inserted one within another. This technique of packing clams would be an efficient means of compacting a load of garbage to be trans-

ported to a dump. Although flecks of charcoal, burnt shell and bone are found throughout the "mound" deposits, there are no hearths or indications of **in situ** burning anywhere at Wn96 in contrast to Wn8. There is also a marked absence of post molds and refuse pits within the refuse heaps and in the area which Kannenberg and Peske excavated is devoid of Oneota materials. The above data indicate a practice of carrying garbage from a dwelling area and depositing it away from the village.

The alteration and formation of WN96 through prehistoric agricultural techniques is perplexing to interpret. "Garden beds" are present at the site and were reported as early as 1839 by Mr. D. Giddings who was the land surveyor for Winneconne Township (Land Survey Notes, housed in the Land Office, State Capitol, Madison). Numerous "garden beds" have been reported in south and central Wisconsin (Fox, 1922) and in adjacent areas of the Upper Great Lakes (Fox, 1959); however, there has been no direct association of Indian artifacts with these topographic features. Their surface resemblance to horse-plowed fields coupled with the absence of ethnographic data on these features, led me to the assumption that the "garden beds" were probably early historic Indian or French. At Lasley's Point, we excavated a 12' by 2.5' trench across a part of one "garden bed" in order to observe how the beds were constructed. The unit contained three ridges and three furrows oriented in an east-west direction. Going from north to south the respective topographic relief measurements from each furrow to the top of each ridge are 3, 3½, and 2½ inches. The distances from ridge to ridge are 4' 1", 5' 3", and 4' 0". The depth of the darker topsoil is one inch on the ridges and 3 - 5 inches in the furrows. The deeper soil in the furrows is probably due to erosion and through compensation for erosion, the topographic relief figures for when the beds were constructed, should be increased by three inches giving an average elevation difference between the ridges and furrows of six inches.

All the excavated soil from the "garden bed" unit was troweled and screened. The dark topsoil contained a clam shell fragment, flecks of charcoal, and one small plain Oneota

body sherd from which the shell temper had leached out. In addition, the topsoil contained no cobbles or large pebbles. The subsoil had no cultural materials but contained some large rocks. On the basis of quantities of rock being present in the refuse heaps, subsoil, and areas devoid of "garden beds", while being absent in the "garden beds", I assume that the "gardens" were cleared of rock which was then thrown into the garbage dump area. This interpretation is further supported by data acquired at the Eulrich Site which is discussed later on in this paper.

In the furrows, the soil profiles are irregular and show small gouged-out pockets in the subsoil which is probably indicative of digging with a hoe. The refuse heap deposits contained broken bison scapula hoes which have polish from use on the blades. The vertical profiles of the furrows do not have a V-shape which is diagnostic of plowing, but instead they have a broad, irregular U-shape.

Aside from the "garden beds" and bison scapula hoes which indicate cultivation, the refuse heaps contain charred corn kernels and cobs and some of the pollen samples have grains of corn pollen.

The "garden beds" occur in an area on the site which was forested as is evidenced by the soil type and early land survey records; thus, the form of agriculture was most likely slash and burn. Presently, Wn96 is covered with a second growth forest of aspen, oak, elm, and some ironwood. These trees are frequently growing in clones and are no older than 40-60 years. Sometime between A. D. 1840 and 1900 the site was probably lumbered or burned off which resulted in a secondary forest with a clone type of growth.

In reconstructing the general settlement pattern and agricultural practices at Lasley's Point from A. D. 1000-1300 (Lake Winnebago Focus occupation), there is a village and cemetery site adjacent to the Lake Winneconne shore and an area ¼ of a mile inland in a forest containing gardens and garbage dump areas. The gardens are small plots of ridges and furrows dug with large mammal scapula hoes and possibly shell hoes. The larger rocks were cleared from these small fields and added to the refuse heaps in the nearby vicinity.

These fields were planted with corn and possibly beans and squash although there is no archeological evidence for these two crops at Wn96 or Wn8.

Furman and Eulrich Sites. These sites are analagous to Wn8 and Wn96. Furman Site is located on the shore of Lake Winnebago in Vinland Township, Section 29. It is a single component Lake Winnebago Focus village and cemetery. Unfortunately, the area has been extensively plowed but a few features still are undisturbed beneath the plow zone. Numerous artifacts are present in the field and a series of twenty extended burials with Lake Winnebago vessels and shell spoons were excavated by Peske at the Furman Site. One quarter of a mile to the east on the lake shore is the Karow Site (McKern, 1945) which is probably a part of the same settlement. The only **in situ** materials at Furman were the burials and the items included in the burial fill. This fill contained Lake Winnebago Focus sherds, chert flakes, scrapers, and triangular points. The floral and faunal remains consisted of charcoal, charred corn kernels, animal bone, and shell. The Furman Site and the adjacent Karow Site are lake shore villages and cemeteries like Wn8 at Lasley's Point.

One mile inland from the Furman Site is the Eulrich Site which is in Vinland Township, Section 20. Like Wn96, the site consists of garden beds and small "mounds" containing numerous rocks. George R. Fox (1922) originally reported the site and in his article he has included photographs and maps of the "garden beds" and rock cairns. The Eulrich Site is noteworthy in that it has curvilinear beds as well as linear beds. Fox was unable to find any cultural materials at Eulrich and in a later publication (Fox, 1959) he proposed the Fox Indians as the builders of the "garden bed" complexes in Wisconsin and Michigan. He arrived at this conclusion through a faulty assumption that all Upper Great Lakes' "garden beds" were made by the same tribe of Indians.

The Eulrich ridges and furrows have the same vertical and horizontal profiles as those at Lasley's Point. The darker topsoil is devoid of large rocks which are present in the subsoil and unworked topsoil. Adjacent to and interspersed in the beds are small rock heaps which attain a maximum size of

fifteen feet in diameter and one foot in height. Some of these rock heaps are on top of the "garden beds".

In addition to the excavation of a part of one "garden bed", The Wisconsin State University - Oshkosh crew completely excavated a rock heap next to the beds. The pile of rock differed from modern field stone dumps in that the stone was in a solid earth matrix. The rock pile was ten inches high and had a diameter of 8½ feet. It produced the only cultural material from the site: six chert flakes, three butt sections of scapula hoes, ten sherds of the same vessel, one piece of shell, one bone from a fresh-water drum, one leg bone of a grouse, and one fragment of an otter mandible. The three scapula, identified by Charles Cleland, were from one bison and two elk. The sherds consist of the rim, neck, and part of the shoulder of a Lake Winnebago Focus vessel. The lip is flat with shallow tool impressions, the rim is extremely flared, the shoulder portion is decorated with wide trailed vertical lines, and the tempering is shell. All of these materials could represent refuse from agricultural activities. The scapula hoes, when broken, were tossed into the piles of field-cleared rock and the other animal bone and shell probably represent the remains of meals which were eaten while tending the fields. The vessel probably held food for a meal or water. In contrast to Lasley's Point (Wn96), the "mounds" contain very little bone, pottery, or chert; this relatively small amount of debris at the Eulrich Site is probably due to the greater distance between the living (village) and farming ("garden beds") area.

In conclusion, the archeological data from Lasley's Point, the Eulrich, and Furman sites indicate a Lake Winnebago Focus settlement pattern of villages and campsites adjacent to rivers or lakes with agricultural fields further inland. Slash and burn agriculture is probably utilized and the earth is hoed up into ridges which have been termed "garden beds". In the construction of the fields the larger rocks are removed and placed in small heaps which may serve an additional function of a garbage dump for the village if the rock heaps are close to the villages.

REFERENCES

Baerreis, David A. and Reid A. Bryson
1965 Climatic Episodes and the Dating of Mississippian Cultures. The Wisconsin Archeologist, N. S., Vol. 46, No. 4, pp. 203-220.

Bullock, Harold R.
1942a Lasley Point Mound Cruising. The Wisconsin Archeologist, N. S., Vol. 23, No. 2, pp. 32-36.
1942b Lasley Point Mound Excavations. The Wisconsin Archeologist, N. S., Vol. 23, No. 2, pp. 37-44.

Caparoon, C. D., ed.
1961 Wisconsin Climatological Data. Wis. Dept. of Agri., cooperating with the Weather Bureau, U. S. Dept. of Commerce. Madison.

Curtis, John T.
1959 The Vegetation of Wisconsin, University of Wisconsin Press, Madison.

Fox, George R.
1922 Stoneworks and Garden Beds in Winnebago County. The Wisconsin Archeologist, N. S., Vol. 1, No. 2, pp. 47-55.
1959 The Prehistoric Garden Beds of Wisconsin and Michigan and the Fox Indians. The Wisconsin Archeologist, N. S., Vol. 40, No. 1, pp. 1-18.

Hurley,, William M.
1965 Codification of Wisconsin's Archaeological Sites. The Wisconsin Archeologist, N. S., Vol. 46, No. 2, pp. 148-157.

Lawson, Publius V.
1902 Clam Eaters and Their Shell Heaps in Winnebago County. The Wisconsin Archeologist, O. S., Vol. 2, No. 1, pp. 6-8.

McKern, W. C.
1945 Preliminary Report on the Upper Mississippi Phase in Wisconsin. Bull. of the Public Museum of the City of Milwaukee, Vol. 16, No. 3, pp. 109-285.

Peske, G. Richard.
1965a A Discussion on the Lacustrine-Riverine Environment and Other Environmental Factors of Two Upper Mississippian Sites in Wisconsin (Lasley's Point and Carcajou Point). Unpub. Manuscript.
1965b An Ecological and Climatological Interpretation of Some Faunal Remains from the Midwest: 9th - 18th Century A. D. Unpub. Manuscript.

Yarnell, Richard Asa
1964 Aboriginal Relationships Between Culture and Plant Life in the Upper Great Lakes Region. Anthropological Papers No. 23, Museum of Anthropology, Univ. of Michigan. Ann Arbor.

ARCHAEOLOGICAL PLANT FOOD REMAINS FROM WISCONSIN

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Food plant remains have been reported from at least seven archaeological sites in Wisconsin. This paper will add three Oneota sites to the record: two sites at Lasley's Point (A. D. 1100-1300), Winnebago Focus, and the Midway Site (A. D. 1400-1500), Orr Focus (see Table 1). The new data was obtained through the aid of a National Science Foundation Grant GS-433.

There are published records of cultivated plant food remains from six sites and wild plant food remains from four sites (C. F. Baerreis, 1965). Barrett (1933:115, 128, 356) reports squash and C. W. Rowe (1958:107) reports hickory nut from the Middle Mississippian Aztalan Village. In addition Joan Freeman has found corn at this site (Joan Freeman, personal communication, 1966). The Late Woodland Dietz Site has yielded corn (Cutler, 1956:17), plum (**Prunus americana** Marsh), hickory nut (**Carya ovata** K. Koch), and acorn (**Quercus valutina** Lam) (Baerreis and Nero, 1956:10)

Corn has been reported for three Oneota Sites in Wisconsin, including Carcajou Point (Hall 1962:31) and the Mccauley and Shrake-Gillies Sites (McKern 1945:138). Other records include corn, squash (**Cucurbita pepa** L.), and plum (**P. americana**) from the Bell Site (Blake and Cutler, 1963: 70-71), walnut from the Kakwatch Site (Barrett and Skinner, 1932:454), and hazelnut, butternut, and hickory nut from Oneota sites (McKern, 1945:138).

A total of 33 grams of plant remains in 75 samples supplied by G. R. Peske from four Wisconsin Oneota sites were analyzed. This includes 5 g. in 2 samples from Carcajou Point (Je 2), 10 g. in 39 samples from Lasley's Point (Wn 8), 12 g. in 17 samples from Lasley's Point (Wn 96), and 6 g. in 17 samples from the Midway Site (LC 19). Unless otherwise indicated, all of this material is carbonized.

The two Carcajou Point samples contain the greatest diversity of plant remains yet reported for Wisconsin. Both samples contain small quantities of wood charcoal, hickory nut-

shell, and corn cob and several fragmentary corn kernels. The many small acorn shell fragments of sample A (1.75 g.) are more than matched by acorn shell fragments in sample B (3.72 g.), representing approximately 6 acorns plus four acorn half-meats. The two samples also have two kinds of small seed in common. **Chenopodium** (most likely **C. hyridum** L or **C. album** L.) is represented by 10 seeds in A and 15 seeds in B, while clover seeds (**Trifolium** sp.) number 4 in A and 12 in B. The only additional Carcajou Point identifications include one grass seed and one cleavers seed (**Galium** sp.) in sample A and one blackberry or raspberry seed (**Rubus** sp.), one ragweed achene (**Ambrosia artemesiifola** L.), and a pepper root tuber (**Dentaria laciniata** Muhl.) in sample B. Thus, the two samples, which were taken from two areas of the same feature, are similar in composition. Probably six plant foods are represented here: corn, hickory nut, acorn, chenopod, blackberry or raspberry, and pepper root; though the chenopod seeds may only represent a weed on the site, like ragweed and, presumably, clover.

Sample contents from the two sites at Lasley's Point are similar in composition, with respect to hickory nutshell and corn. In Wn 8 there are 21 samples with hickory nutshell, 10 samples with a total of 15 kernels, and 2 samples with cob fragments; while in WN 96, 11 samples contain hickory nutshell, 9 contain 19 kernels, and 2 contain cob fragments. Otherwise, plant food remains from the two sites are dissimilar. Wn 96 yielded only one grape seed and one plum pit (**P. americana**), whereas Wn 9 yielded a hazelnut shell fragment and acorn remains from 4 samples, including 4 acorn half-meats from two levels of one test pit and shell of approximately 6 acorn from two levels of another pit. The one surprising thing about the Lasley Point plant remains is the absence of acorn from Wn 96, though both the shell and meat are relatively abundant in the Wn 8 samples.

The relatively recent Midway Site plant remains are surprising in the near absence of both hickory nut and acorn, each occurring in only one sample, though the wood charcoal consists predominantly of oak. Almost half of one sample is composed of a material which may be birchbark. The same

sample includes two plum pits (**P. americana**). Corn is represented by cob fragments in 4 samples and 10 kernels in 5 samples from 4 of the 6 test pits with plant remains. The most interesting of the Midway plant remains are five bean cotyledons (**Phaseolus vulgaris** L.) in 5 samples from 3 test pits. This appears to be the first record of prehistoric beans from Wisconsin, and it is not unlikely that beans had been cultivated in this region for only a brief period before the time of occupation of this fifteenth century village. The shortage of nut remains from this site may be explainable in terms of productive corn-beans-squash cultivation.

Rather extensive prehistoric agriculture is now well established for Wisconsin, with nine sites yielding corn and one each yielding squash and beans; though there is as yet no demonstration of pre-Mississippian plant cultivation. In addition, wild plant foods are relatively well represented with 15 reports of nuts, 6 reports of wild fruits, and one report each of seeds and a tuber. All but 3 of the cultivated and all but 5 of the wild plant food remains have been reported during the past decade, which may be an indication of the increasing awareness among archeologists of the importance of recovery and analysis of archaeological plant remains.

Site	County	Corn	Beans	Squash	Hickory Nut	Walnut	Butter-nut	Acorn	Hazel Nut	Plum	Grape	Black Berry	Chen-opod	Pepper Root
Dietz	Dane	X			X			X		X				
Aztalan	Jefferson	X		X	X									
Carcajou	Jefferson	X												
Pt. Je 2-Hall Je 2 (Peske)	Jefferson	X			X			X				X	X	X
Lasley's Pt. (Wn8)	Winnebago	X			X			X	X					
Lasley's Pt. (Wn96)	Winnebago	X			X					X	X			
Midway	LaCrosse	X	X		X			X		X				
McCauley	Winnebago	X												
Shrake-Gillies	Trempealeau	X												
"Oneota Sites"					X		X		X					
Kakwatch	Menominee					X								
Bell (Fox)	Winnebago	X		X						X				

TABLE 1. Archaeological Plant Food Remains from Wisconsin

Test Pit	Level	Feature	Gram Wgt.	Wood Charc.	Hickory Nut-shell	Corn	Other
2	1		0.20				½ acorn meat
2	2		0.68		X		3/2 acorn meat
3	4		0.08		X		
9	3		0.04			k	
12	3		0.12		X		
12	4		0.27	X	X	2k	
12	4		0.24	X	X		
12	5		0.21	gall	X	k	
12	6		0.18				(unidentified)
13	2		1.42				shell of c.5 acorns
13	3		0.19		X	2k	acorn shell
14	2		0.16	X	X		
14	3A		1.00	X			
14		18	0.14	X			
15	2		0.28	gall	X	2k	
15		16	0.04		X		
15		16	0.06	X	X		
16	1		0.63	gall	X	--	hazelnut shell
16	3		0.65	X	X	2k	
16B	2		0.24		X		
16B	2		0.20	X	X		
16B	3		0.17		X	k	
16B		19	0.11		X	k, cob	
16B		19	0.10	X			
19	3		0.09			k	
19		21	0.07			k	
19	-	21, 23, 27	0.30			cob	
19		23	0.13		X	k	
19		25, 26	0.06	X			
20	3		0.19	X			
20	4		0.08	X			
20	4		0.19		X		
20	6		0.12		X		
20	7+	30	0.14	X			
20	7+	31	0.34	X			fish scale
20		31	0.13		X		
20		31, 40	0.10				
(driveway well)		38	0.05	X			
(gen. burial fill)			0.13	X			

TABLE 2. Plant Remains from Lasley's Point (47Wn8). (k=kernel)

Square	Level or Feature	Gram Weight	Wood Charc.	Hickory Nutshell	Corn	Other
1555 - 5080	L2	0.09		X		
1555 - 5080	L3	0.06		X		
1555 - 5080	F5	0.23	bark			
1555 - 5080	F5	0.12			2k	
1550 - 5090	L1	0.02				grape seed
1550 - 5090	L2	0.06			2k	
1550 - 5090	L3	0.66	X	X		
1550 - 5090	L3	3.00	X	2.5 g.	2k	plum pit
1550 - 5090	L3	0.63	X			
1550 - 5090	L4	0.44	X	X	k	
1550 - 5090	L4	1.90	X	1.4 g.	2k	
1550 - 5090	L4	0.42	X	X		
1550 - 5090	F1	0.77	X		5k, cob	
1560 - 5090	L2	0.41		X	k	
1560 - 5090	L3	0.33	X	X	3k	
1560 - 5090	L4	1.48	X	X	cob (8 row)	
1560 - 6100	gen.	1.54	X	1.4 g.	k	

TABLE 3. Plant Remains from Lasley's Point (47 WN 96). k=kernel)

Sample	Test Pit	Level	Feature	Gram Weight	Wood Charc.	Corn	Beans	Other
1	1	1		0.27	X	cob	½	
2	1	1	3	0.81	X			Birch bark ? 2 plum pits
4	1	2	1	0.06			½	
7	1	3	1	0.20	X			
12	1	6	15	0.03			½	
	1	7	5	0.31	bark			
14	1	7		0.24	X	2k		
51	9	4	1	0.23				(unid., non-carb)
68	14	2		0.73	0.7 g.			acorn shell
70	14		1	0.60	X	5k, cob		
81	18			0.22	X	k	½	
83	18	4		0.24	X			
85	19	1		0.16	0.1 g.		½	
91	20	2		0.83	X	k, cob		hickory nutshell
93	20	4		0.46	X			
94	20	5		0.15	X			
95	20	6		0.42	X	k, cob		

TABLE 4. Plant Remains from the Midway Site (47 LC 19) (k=kernel)

LITERATURE CITED

Baerreis, David A.
1965 Review of Aboriginal Relationships Between Culture and Plant Life in the Upper Great Lakes Region, by Richard Asa Yarnell, Anthropological Papers, Museum of Anthropology, University of Michigan, No. 23, 1964. The Wisconsin Archeologist, N. S., 46 (1): 117-122.

Baerreis, David A. and Robert Nero
1956 The Storage Pits of the Dietz Site (Da12) and Their Contents. **Ibid.** 37 (1): 5 - 18.

Barrett, S. A.
1933 Ancient Aztalan. Bulletin of the Public Museum of the City of Milwaukee, 13: 1-602.

Barrett, S. A. and Alanson Skinner
1932 Certain Mounds and Village Sites of Shawano and Oconto Counties, Wisconsin. Bulletin of the Public Museum of the City of Milwaukee, Vol. 10, No. 5.

Blake, Leonard W. and Hugh C. Cutler
1963 Plant Materials from the Bell Site (Wn 9), Wisconsin. The Wisconsin Archeologist, 44 (1): 70-71.

Cutler, Hugh C.
1956 Corn from the Dietz Site, Dane County, Wisconsin. **Ibid.** 37 (1): 18-19.

McKern, W. C.
1945 Preliminary Report on the Upper Mississippi Phase in Wisconsin. Bulletin of the Public Museum of the City of Milwaukee 16 (3): 109-285.

Rowe, Chandler W.
1958 A Crematorium at Aztalan, The Wisconsin Archeologist, N. S., Vol. 39, No. 1, pp. 101 - 110.

A SURFACE COLLECTION OF TRUNCATED BARB AND BIFURCATED BASE PROJECTILE POINTS FROM CENTRAL ILLINOIS

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The 72 projectile points analyzed here have been collected by the junior author from the surfaces of a number of sites in southwestern McLean County and northwestern DeWitt County near the geographical center of Illinois. All of the sites are in the prairie domain and are located within the drainage of Kickapoo Creek, a small tributary of the Sangamon River.

The specimens are divided into two "types," truncated barb and bifurcated base. The so-called truncated barb point was originally noted from Dodge County, Wisconsin (Ritzenthaler, 1961) and another sample has subsequently been reported from northeastern Illinois (Palmer and Palmer, 1962). Two varieties of bifurcated base points, differing primarily in size, have a wide distribution in the eastern United States (cf. Fitting, 1964).

The Wisconsin and northeastern Illinois truncated barb specimens have asymmetrical ("truncated"), concave-sided blades, average about 1½ inches (ca. 38 mm.) in length and 1⅛ inches (ca. 28 mm.) in width, and, in the northeastern Illinois sample, 95 percent have concave bases and 75 percent exhibit fine serration on the blade edges. The 31 truncated barb specimens considered here (Fig. 1 a-h, Table 1) conform very closely to these samples with one exception; only 14 percent of the central Illinois specimens are serrated.

Fitting (1964) segregates two classes of bifurcated base points, a large bladed variety and a smaller, triangular bladed form. The 41 bifurcated base specimens analyzed here (Fig. 1 i-p, Table 2) fall intermediately between the Michigan specimens which Fitting illustrates. Fitting's largest specimen (1964, Fig. 1 g) is approximately 48 mm. long and 29 mm. wide, or 3 mm. longer than the range for the central Illinois specimens but within the range for width; and Fitting's smallest specimen (1964, Fig. 1 c) is about 26.5 mm. long and 17 mm. wide, which is completely within the range for the Illinois

a

b

c

d

e

f

g

h

TRUNCATED BARB

i

j

k

l

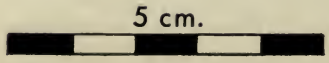
m

n

o

p

BIFURCATED BASE



specimens. The means for these two dimensions of the central Illinois sample fall between the extremes for the Michigan points illustrated; and plotting the modal distribution of the Illinois specimens (using units of 3 mm.), length presents a smooth, very flat, skewed, unimodal curve with a slight peak at 30-32 mm., and width forms a smooth, skewed, unimodal curve strongly peaked at 18-20 mm. Consequently, although this size differentiation may be justified in some areas, and may indeed have chronological reality, any attempt to so divide the sample considered here would necessarily be strictly arbitrary.

Additional similarities exist between the truncated barb and bifurcated base points. Although the blade shape is quite different, the stems are almost identical in outline, and all measurements except maximum width are quite similar. Applying the t-test of significance to these measurements, the differences in thickness, total length, blade length and stem width are not significant at the .20 level; stem length is significant beyond the .05 level: and maximum width is significant beyond the .001 level. Disregarding, perhaps unjustifiably, the rather low level of significance for the differences in stem lengths, the major statistical difference is maximum width, and this difference is perhaps a result of the differences in blade shape. Consequently, we feel that the similarities between these two forms are sufficient to suggest that they represent no more than varieties within what is essentially one type, a suggestion which gains some additional support from the fact that in the central Illinois area of collection both forms are typically recovered from the surfaces of the same sites.

Assuming that the two points are indeed closely related, some indication of the age and cultural association of the truncated barb points is available. Fitting (1964, p. 94) suggests that the larger form of bifurcated base points dates prior to 5000 B. C. whereas the smaller form is Late Archaic to Early Woodland. Since the bifurcated base points considered here are intermediary to Fitting's two forms, we will suggest an intermediary date for these bifurcated base and related truncated barb specimens, this alignment agreeing with Win-

ter's (1963, p. 22) suggestion that bifurcated base points are Middle to Late Archaic.

LITERATURE CITED

Fitting, James E.
1964 Bifurcate-Stemmed Projectile Points in the Eastern United States. **American Antiquity**, Vol. 30, No. 1, pp. 92-94.

Palmer, Charles, and Harris Palmer
1962 Truncated Barb Points from Northeastern Illinois. **Wisconsin Archeologist**, n. s., Vol. 43, No. 1, pp. 9-12.

Ritzenthaler, Robert
1961 Truncated-Barb Points from Dodge County. **Wisconsin Archeologist**, n. s., Vol. 42, No. 2, pp. 90-91.

Winters, Howard D.
1963 An Archaeological Survey of the Wabash Valley in Illinois. **Illinois State Museum Reports of Investigations.** No. 10.

TRUNCATED BARB

Measurements	Sample	Range	Mean	S. D.
Length	(18)	24 - 50 mm.	36 mm.	+ — 6.6 mm.
Max. Width	(29)	19 - 35 mm.	27 mm.	+ — 3.8 mm.
Thickness	(31)	3 - 7 mm.	4.5 mm.	+ — 1.0 mm.
Blade Length	(19)	14 - 41 mm.	27.5 mm.	+ — 6.5 mm.
Stem Length	(29)	7 - 10 mm.	8.5 mm.	+ — 1.0 mm.
Stem Width	(29)	10 - 17 mm.	14 mm.	+ — 1.8 mm.

Ratios	Sample	Range	Mean	S. D.
Length/ Max. Width	(17)	.9 - 1.6	1.2	+ — .1
Blade Length/ Stem Length	(18)	1.4 - 4.6	3.2	+ — .9
Blade Length/ Max. Width	(19)	.5 - 1.3	.9	+ — .2
Stem Length/ Stem Width	(28)	.4 - .9	.6	+ — .1
Max. Width/ Stem Width	(28)	1.3 - 2.7	1.9	+ — .3
Max. Width/ Thickness	(28)	3.5 - 9.0	6.3	+ — 1.6

Percentages of Attributes

	Blade Edges	Base Edges
Convex		
Straight		3%
Concave	100%	97%

Serration of Blade Edges — 14%

TABLE 1. Attributes of Truncated Barb Projectile Points

BIFURCATED BASE

Measurements	Sample	Range	Mean	S. D.
Length	(18)	25 - 45 mm.	35 mm.	+ — 5.7 mm.
Max. Width	(39)	15 - 30 mm.	20.5 mm.	+ — 3.5 mm.
Thickness	(38)	3 - 7 mm.	4.5 mm.	+ — 1.1 mm.
Blade Length	(18)	16 - 34 mm.	25.5 mm.	+ — 4.7 mm.
Stem Length	(41)	7 - 16 mm.	9.5 mm.	+ — 2.5 mm.
Stem Width	(40)	11 - 20 mm.	14 mm.	+ — 2.3 mm.

Ratios	Sample	Range	Mean	S. D.
Length/ Max. Width	(16)	1.4 - 2.3	1.7	+ — .2
Blade Length/ Stem Length	(18)	1.5 - 3.7	2.9	+ — .7
Blade Length/ Max. Width	(16)	1.0 - 1.7	1.3	+ — .2
Stem Length/ Stem Width	(40)	.4 - 1.0	.6	+ — .1
Max. Width/ Stem Width	(38)	1.0 - 1.9	1.4	+ — .2
Max. Width/ Thickness	(37)	2.4 - 6.7	4.6	+ — 1.2

Percentages of Attributes	Blade Edges	Base Edges
Convex	15%	
Straight	85%	
Concave		100%

Serration of Blades Edges — 22%

TABLE 2. Attributes of Bifurcated Base Projectile Points

RIM DIAMETER AND VESSEL SIZE IN WAYNE WARE VESSELS

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The archaeologist is often left with only the faintest traces of the cultures of bygone peoples. He has only the discarded flint debris, the broken pottery and other such cast-offs for his interpretations and comparisons. All too often the archeologist has been content with this minimum amount of information and has not sought to go beyond it.

One such example might be the study of rimsherds from a site. The common practice is to find and count rimsherds and then forget them. Occasionally you will find a discussion of rim diameter and, even more rarely, when whole vessels are available, an estimation of vessel volume. In reality, the size of the vessel, its volume, was the foremost criteria in the minds of the aboriginal potters. Our ancient potters did not make a rim with a diameter of six inches and then go on to construct the rest of the pot; they made small, medium or large pots with the rims a part of these pots. In initiating this study we felt that we, as archaeologists, would benefit by thinking of even broken pots in terms of the original vessel size.

In order to determine the relationship of rim diameters to vessel size we needed a consistent series of whole vessels. Such a series was furnished by a number of Wayne Ware vessels from eastern Michigan. Wayne Ware was defined and illustrated by Fitting (1965: 158-9, Plates V-VIII) but similar vessels have been reported from Michigan by Hinsdale (1930: 128) and later Quimby (1941: 495), who referred to them as "Generalized Woodland." The vessel form, a globular, cordmarked vessel with a slightly constricted neck, is a form with a wide geographical distribution. The formula which we developed would also apply to most of these related forms from other areas.

We measured rim diameters and volume on 14 Wayne Ware vessels; six from the Fort Wayne Mound, five from the Bussinger site, two from the Riviere au Vase site and one from the Gibraltar site. Rim measurements were taken in

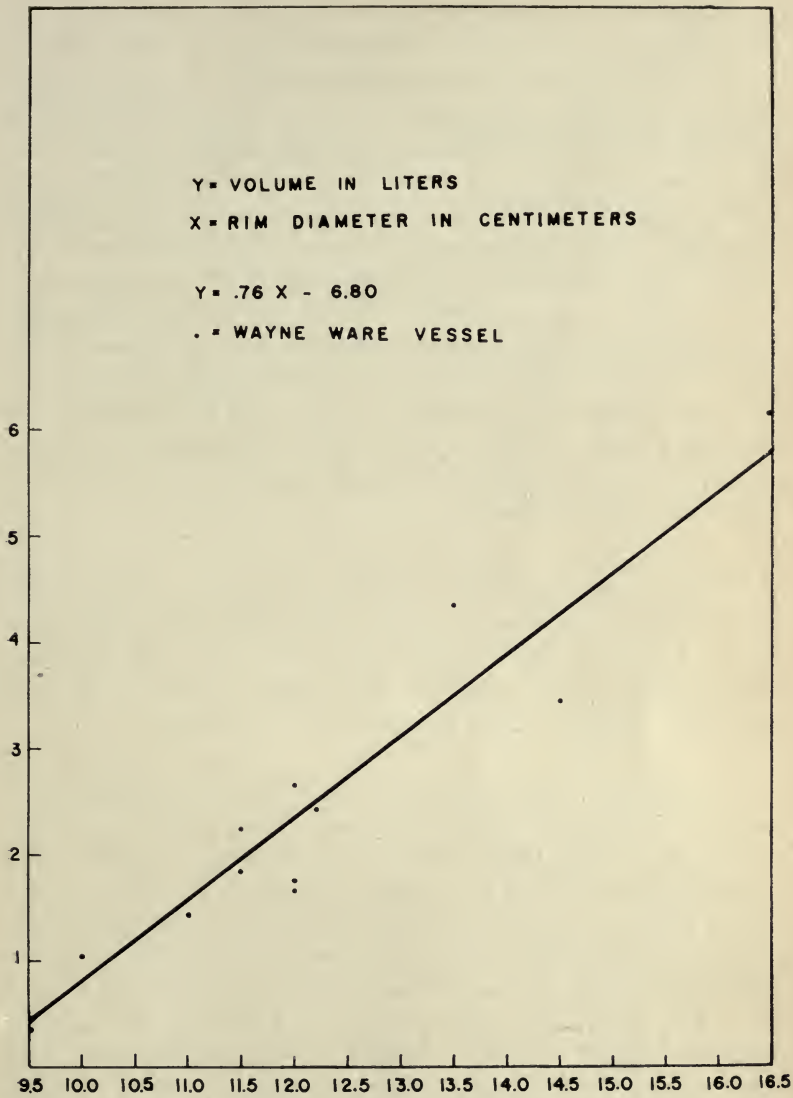
Y = VOLUME IN LITERS
X = RIM DIAMETER IN CENTIMETERS
Y = .76 X - 6.80
. = WAYNE WARE VESSEL
6
5
4
3
2
1
9.5
10.0
10.5
11.0
11.5
12.0
12.5
13.0
13.5
14.0
14.5
15.0
15.5
16.0
16.5

FIG. 1

centimeters and the volume was measured in liters. The relationships were plotted on a graph (Figure 1) with each dot representing a vessel. There appeared to be a strong positive relationship. This was proved by a correlation coefficient of + .92 (+ 1.0 is a perfect relationship). This relationship could be expressed with a regression formula where y is the vessel volume in liters and x is the rim diameter in centimeters: $y=.76x - 6.80$, or the volume in liters=.76 times the rim diameter in centimeters less 6.80. If a vessel has a rim diameter of 15 centimeters we can predict a volume of 4.6 liters. One limitation of this formula is that it applies only to vessels with a rim diameter of ten centimeters or more; below this you are dealing with miniature vessels. In fact, with a rim diameter of less than nine centimeters the formula would yield a negative capacity. In the larger size ranges we have found this formula to be very effective.

If you want to convert to inches and quarts remember that there are 2.54 centimeters to an inch and 1.06 quarts to a liter. A Wayne Ware vessel with a four inch rim diameter would hold a little less than a quart while a vessel with a six inch rim diameter would hold close to five quarts.

This formula was applied to ceramics from the Spring Creek site in Muskegon County, Michigan. Here there were fragments of at least 966 vessels but none were complete. We were able to find rim diameters for about 250 vessels with a sherd board, a board with a series of circles showing the expected curvature for various rim diameters. We found three pottery variants on the site with rim diameters of 17.9, 15.9 and 14.7 centimeters. This meant a difference in carrying capacity of 6.8, 5.3 and 4.4 liters. It was further found that the frequencies of larger vessels increased with the distance from tse nearest source of water. This takes on significance when we interpret it in terms of vessel volumes and find that it means far fewer trips to the stream to get water. To us at least, it makes the potsherds seem more like they were once whole pots; like they were something which had a place and a meaning in the everyday lives of the people who used them.

REFERENCES

Fitting, James E.
1965 Late Woodland Cultures of Southeastern Michigan. **Anthropological Papers, Museum of Anthropology, University of Michigan** No. 25. Ann Arbor.

Hinsdale, Wilbert B.
1930 Report of Archaeological Field Work in the Summer of 1928 in Montmorency, Newago and Lake Counties, Michigan. **Papers of the Michigan Academy of Science, Arts and Letters,** Vol. 12, pp. 127 - 135, Ann Arbor.

Quimby, George I.
1941 Hopewellian Pottery Types in Michigan. **Papers of the Michigan Academy of Science, Arts and Letters,** Vol. 26, pp. 489-494. Ann Arbor.

THE BOOKSHELF

By

David A. Baerreis

and

Guest Reviewers

While we have, on several occasions, carried reviews of the important publications that have appeared as **Anthropological Papers** of the Museum of Anthropology, University of Michigan, we have by no means kept abreast of this major series. The most recent to appear is No. 26, "Two Stratified Sites on the Door Peninsula of Wisconsin," by Ronald J. Mason which may be purchased at a cost of $3.00 from the Museum of Anthropology, University Museums Building, Ann Arbor, Michigan. Since this study contains the results of excavations of strategic importance in Wisconsin, it will be reviewed at length in a forthcoming number but many of our readers will perhaps not care to wait for the publication of the review before purchasing a copy.

The technically minded may be particularly interested in No. 25, "Studies in the Natural Radioactivity of Prehistoric Materials," edited by Arthur J. Jelinek and James E. Fitting and with contributions by these two staff members of the University of Michigan as well as Charles E. Cleland and Lewis R. Binford. The publication is priced at $2.00. Readers of **The Wisconsin Archeologist** should already be familiar with the analysis of natural radioactivity through the paper in our journal by Lewis R. Binford (**Wis. Arch.** 43: 31-41, 1962) which dealt with the analysis of bone from the Oconto site. Binford was able to conclude that the Oconto burials represented a single component or burial episode and that it was unlikely that the cemetery had ever been submerged under lake waters, both of these points being of considerable value in the interpretation of the material. I raise the Binford paper deliberately, not only to remind the reader of an earlier exposure to the method, but because some of the findings of this study are in conflict with those of the longer collection

of papers now under consideration. Thus Binford (ibid: 37) concluded that bone density did bring differential rates of absorption whereas Cleland in the new study, though in a paper written in July, 1962, (p. 53) concludes that this is not the case. Inspection of the data suggests that neither experiment has a sufficient number of paired bones from the same burial to provide an adequate test of the importance of bone density as a variable. Editorial laxity is evident in relation to the papers by Binford which speak of the bones as "adsorbing radiation" (pp. 29, 30, 31, 41) while obviously what is meant is the absorbing of a mineral which emits radiation. Absorption and adsorption appear to be used interchangeably throughout the volume though presumably these refer to different processes. On the whole the report contains little of immediate value to the general reader, though it does serve to clear a great deal of ground for further investigations utilizing counts of natural radioactivity.

A more recent publication in this series of general utility is a "Bibliography of Michigan Archaeology," by Alexis A. Praus (No. 22, 1964, Price $2.00). The bibliography contains 762 entries arranged alphabetically and numbered consecutively. Annotations have been added when the contents of an entry were not obvious from the title. A brief index has been added and perhaps in a future number it could be made more specific since presently it is too general to be of great utility.

We hope to review in greater detail in a future issue No. 24 in this series, "Late Woodland Cultures in Southeastern Michigan" by James E. Fitting ($3.00). It contains much of relevance to Wisconsin prehistory. We conclude this issue of The Bookshelf with a review by James B. Stoltman of another recent number in this series. Professor Stoltman has just this year joined the staff of the Department of Anthropology at Madison and we hope to see him at work soon on the clarification of some of our problems in Wisconsin prehistory. His particular interest is in the early time horizons.

DAVID A. BAERREIS,
University of Wisconsin

The Paleo-Indian Occupation of the Holcombe Beach. By James E. Fitting, Jerry DeVisscher, and Edward J. Wahla. Anthropological Papers, Museum of Anthropology, University of Michigan, No. 27, 1966. 147 pages, 49 tables, 20 figures, 12 plates. $2.50.

The volume under review is the most recent and apparently final report of archaeological investigations conducted at an important Paleo-Indian location on the outskirts of Detroit in Macomb County, Michigan. Work at four sites, all located on the same sand ridge within a radius of one-half mile, is described. The most intensive investigations were carried on by the University of Michigan at the Holcombe Site in 1961. Subsequently, between 1962 and 1964, the other three sites (termed Paleo II, Paleo II-W, and Paleo II-W-A) were discovered and smaller-scale test excavations conducted by Jerry DeVisscher, with the occasional assistance of Edward J. Wahla and other members of the Aboriginal Research Club of Detroit and the Michigan Archaeological Society. The assemblages recovered from the four sites are so similar that they are considered the product of "a single culture, perhaps even a single family group" (p. 118); all sites are shallow and appear to be single component.

Discussion is organized into three parts, the first two of which are primarily descriptive. The third part is comparative, dealing initially with intra-locality similarities and differences, finally with extra-locality relationships within the eastern Woodlands.

Part I (pp. 1-81), by Professor James E. Fitting deals solely with the Holcombe site and is the longest and most substantive portion of the report. A total area of 2,675 square feet, broken up into blocks of non-contiguous squares, was excavated. In places excavation reached depths of 5.9 feet, but all artifacts were confined to the upper two feet of deposit, i. e., to the plow zone and to the A^2 soil horizon.

Eight pit-like discolorations at the Holcombe Site were assigned feature numbers. Two of these (nos. 3 and 7) are considered to be burned-out tree stumps, two (nos. 5 and 6) are classified as "either hearths of a later occupation or natural disturbances" (p. 17), while the remaining four are attributed

to the Paleo-Indian occupation of the site. Of special significance is the occurrence in Feature 2 of "a dense concentration of calcined bone fragments" among which C. E. Cleland (**Amer. Antig.** 30: 350-1, 1965) has identified a phalanx fragment of a barren ground caribou. It is the only faunal identification thus far from the site. At least one radiocarbon date has been obtained from one of the features (1630 B. C. – 200; M-1401); however, for some unspecified reason the charcoal sample was taken from Feature 3, one of those considered to be a burned-out stump unrelated to the Paleo-Indian occupation.

The lithic sample from the site totals 8,053 specimens, most of which were excavated by the University of Michigan, but some of which were added by DeVisscher during independent work after the Michigan crew concluded its field season. Of this total, 393 are artifacts, 7,600 are debitage, i. e. unutilized by-products of tool manufacture.

Fitting's description and analysis of this industry is a unique contribution to the literature on the Paleo-Indian Era. For, not only does he describe in detail the artifacts but he also treats the débitage in similar depth. Thus, three types of flakes are recognized among the débitage on the basis of technological criteria, i. e. large flakes produced by the bifacial flaking of artifacts (subdivided into two categories on the basis of the presence or absence of a striking platform), small flakes produced by edge retouch, and "block fracture flakes" believed to be the result of heat fracture. These flakes types, taken to be indicative of different stages in the process of artifact manufacture, are later employed in a distributional analysis in order to infer different activity areas both within the site and between the Holcombe Site and the other three sites.

With the exception of eight stemmed and notched projectile points, all of the chipped stone artifacts recovered from the Holcombe Site (385 of 393) are regarded as a single industry consisting mainly of projectile points, bifacial "preforms" (a term used in perefence to blanks), and unifacial scrapers. Cores and gravers are surprisingly scarce.

The most abundant artifact type from the site is a lanceolate projectile point, typically with a deep basal concavity and

lateral grinding. Some are unifacially fluted (none is fluted on both faces) ,but most are basally thinned. In an earlier analysis of forty-four Holcombe projectile point bases, Fitting (1964) found a statistically significant association between two attributes suggesting to him the possibility of at least two "classes" (types?) within this sample. In the present report, using a larger sample of point bases (110) and redefining some of the attributes employed, he finds "even greater uniformity than that which I had suggested in my earlier study" so that "the possible associations suggested in my earlier study did not prove valid" (p. 61). Considering this within-site homogeneity and the acknowledged presence of "Holcombe points" at the other three Holcombe beach sites (pp. 84, 96, and 105), not to mention northern Ohio (J. B. Griffin, **in Quaternary of the U. S.,** 1965: 660), I find it strange that the usage "Holcombe type" is nowhere employed (for this is what the authors seem clearly to have in mind) and unfortunate that a formal definition stating the known range of variation of this type is not included in the report.

Typologically, the Holcombe points seem to fall midway between Clovis on the one hand (traditionally dated ca. 10,000 - 9,000 B. C.) and Plano on the other (dated ca. 8,000 - 4,000 B. C.). It comes as a bit of a surprise, then, to find geologic dating of the Holcombe beach sites suggesting an age for them of **before** 9,000 B. C. (pp. 93 and 133). A note of caution must be sounded here, however. Lake beach dating of archaeological assemblages has an inherent limitation that must not be forgotten — the geologic age of the beach defines the **maximum** possible age of human occupation only. Artifacts on the beach **could** date from any time after its formation. Of course, it is reasonable to assume that the optimum conditions for human habitation exisited when the lake level stood nearest the site. In such case, one would hypothesize, as the authors have done, that the Holcombe ridge was occupied quickly on the heels of its formation during the main stage of Glacial Lake Algonquin about 9,500 - 9,000 B. C.

There are, however, other reasons for living on elevated, well-drained land, and these do not necessarily have to be related to the presence of a lake. In fact, I would submit

that to a caribou hunter the primary factor in site selection would be availability of caribou, whose movements are governed primarily by edible **vegetation.** Since the meager evidence suggests the Holcombe people hunted tundra caribou, we must assume that these sites represent **winter** encampments —during the fall, tundra caribou regularly migrate from their summer ranges on the treeless tundra into the northern fringes of the boreal forest (taiga) where they winter. There is a vast literature showing that caribou diet during winter may consist of two-thirds to 95% lichens. Morevover, lichens are particularly abundant in what Hustich (**Acta. Geog.** 12: 1951) calls "lichen-woodlands", a **dry** forest that constitutes "one of the commonest collective forest types in the forest tundra region" (p. 24). These woodlands are found "particularly in the glaciated regions, on glacifluvial terraces and elevated deltas, on ridges and sandy plateaus, on ancient beaches, etc." (**ibid:** 20).

It seems to this reviewer that the above data casts a strong element of doubt upon the maximum age approach to dating archaeological sites found on Upper Great Lakes elevated beaches. Accordingly, it is suggested that we must seriously entertain the hypothesis that Paleo-Indian hunters frequented sandy, well-drained areas like Holcombe beach not because of proximity to a glacial lake (no particular attraction in winter anyway) but because the flora that such areas supported attracted herds of tundra caribou in exactly the same fashion as similar areas further to the north attract caribou today.

Part II of the report (pp. 83-110) is a description by DeVisccher and Wahla of their excavations and of the artifacts they recovered from the Paleo II, Paleo II-W. and Paleo II-W-A sites. In the first chapter of Part III, Fitting describes the débitage from these sites and then conducts a comparative analysis of the assemblages from all four sites. The same artifact types occur at all of the sites but the proportions differ. On this basis, Fitting is able to draw some limited inferences about differences in duration and season of occupation and in technological activities. The volume concludes with a reconstruction by Fitting of the ecology and sociology of the Holcombe beach "People" and a comparison of the sites with related Paleo-Indian sites of the eastern Woodlands.

There are four aspects of this volume that give it a unique "flavor" among the various reports of eastern Paleo-Indian sites. First, it is a cooperative venture between a professional archaeologist and two conscientious amateurs resulting in a publication of credit to all parties. Second, benefitting greatly from the Old World Paleolithic background of Arthur J. Jelinek of the University of Michigan, it is one of the most detailed and comprehensive lithic analyses in the North American literature. Third, there is a heavy reliance upon statistics (no less than 20 Chi Square tables and an analysis of variance appear in the text) as the basis for drawings conclusions about the significance of observed trends and distributions. Fourth, an attempt is made to extract sociological information from the horizontal distribution of various débitage and artifact types.

The latter effort to do anthropology in an archaeological report is commendable, but this reviewer, at least, does not find the arguments for a central communal area surrounded by family groups very convincing in the case of the Holcombe site evidence. If these speculations were based upon the distribution of more sociologically sensitive data, say houses, we might feel more confident of our ability to infer social structures. However, I know of no necessary correlation between flint knapping activities and kinship, especially when such variables as sexual or age differences in behavior cannot be controlled. No matter how little faith one attaches to such reconstructions, the fact that these hypotheses were possible (we cannot deny their reasonableness, but doubt their provability) is indeed a tribute to the ingenuity of the analysis. This volume has to be considered a must on anyone's Paleo-Indian reading list, both for its content and for its methodology.

JAMES B. STOLTMAN,
University of Wisconsin

RADIOCARBON DATES FOR CLAM RIVER FOCUS

Robert Ritzenthaler

The Clam River Focus branch of the Woodland culture was defined and first described by W. C. McKern * based primarily on his 1935 and 1936 excavations of two rather large burial mounds in Burnett County, Wisconsin. From one of these, the Spencer Lake mound, charred wood and bone was recovered. While most of it was rendered useless for radiocarbon testing because it was treated with paraffin the popular preservative of the time, some of the smaller fragments escaped this treatment and were recently submitted to the University of Michigan and the University of Wisconsin for processing. Dr. James Griffin of the former institution and Dr. David Baerreis of the latter were instrumental in arranging for the testing. Since the Michigan dates had indicated virtually a Middle Woodland context for the culture, support for the dating check in the Wisconsin laboratory was derived from NSF grant GS-1141.

The dates from the charcoal samples processed at the University of Michigan are as follows:

M-1581	from feature 10	1370 plus or minus 110 or A. D. 580
M-1582	mound floor	1420 plus or minus 150 or A. D 530
M-1583	burial 7	1460 plus or minus 120 or A. D. 490

From charred bone samples:

M-1596	burial 18	840 plus or minus 100 or A. D. 1100

The dates from Spencer Lake charcoal samples (two runs each) processed at the University of Wisconsin:

Wis-180	From feature 10	1060 plus or minus 65 or A. D. 890
Wis-181	From feature 10	1190 plus or minus 60 or A. D. 760
Wis-183	From feature 7	1200 plus or minus 60 or A. D. 750
Wis-186	From feature 7	1050 plus or minus 50 or A. D. 900

While the three Michigan dates on charcoal are tightly clustered (490, 530, and 580 A. D.), the 1100 A. D date on the charred bone appears to be deviant on the late side. At least it seems improbable that the mound served as a burial site for 500 years, and one is inclined to accept the earlier three dates for this particular site on the basis of "the majority

* The Clam River Focus. Milwaukee Public Museum Publications in Anthropology No. 9. 1963.

rules" premise. There is, however, good reason to expect that Clam River Focus in general did extend up to 1100 A. D. or even a bit later. The University of Wisconsin dates running several hundred years later than the three Michigan ones, even on the same sample, bring the upper range to 900 A. D. Mr. Robert Salzer (personal communication) finds in his Vilas County excavations Clam River pottery consistently in the same stratigraphic level as Madison cord-impressed, the latter dating in southern Wisconsin sites about 700 to 1200 A. D.

On the basis of the above evidence, it would seem plausible to postulate a time span for Clam River Focus of about 500 to 1200 A. D.

Interesting Wisconsin Specimens

W. O. Noble Collection of Truncated Barbs.

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AN UNUSUAL OLD COPPER POINT

Robert Ritzenthaler

Old Copper Spear Point. Length: 5½ in. W. O. Noble Collection.

In October of 1966 Mr. W. O. Noble of Burlington brought to the Milwaukee Public Museum a socketed-tang spear point for examination. While characteristically Old Copper culture in shape, the specimen had none of the green patination exhibited by such copper pieces, but instead had the general appearance of rusted iron, black with a thin yellowish coating over some areas. Under the microscope it appeared to have been fabricated of thin sheets of metal, apparently iron, hammered together, but most if not all of the metallic iron had undergone oxidation as evidenced by the presence of limonite. The specimen was held to a compass with the expectation that if any metallic iron was present the needle would move, but there was no apparent magnetic reaction. Next it was given a specific gravity test. It checked out at 7.86 comparable to that of meteoric and wrought iron, and seemed to rule out the possibility of copper which has a specific gravity of 8.91 to 8.96. At this point Mr. Elmer Nelson of the Museum's geology department who had run the tests, and I were puzzled. If it was made of meteoric iron, the most plausible hypothesis on the basis of the specific gravity test, why did it not show a magnetic reaction? If not of meteoric iron what could the material be?

The specimen was then submitted to Mr. William Poehl-

man, director of chemical research at the A. O. Smith Corporation. An X-ray Diffraction test showed that the core was native copper with a scale or covering of copper oxide (Cu^2O) with some iron oxide (FE^2O^3). A Qualitative Spectographic analysis showed the following:

	Copper	Iron
solid materials:	major	trace
Oxide materials:	major	major

This confirmed the X-ray Diffraction test in establishing that the spear point was basically metallic copper with some copper oxide, and a trace of metallic iron plus iron oxide. It was evident that the piece was originally made of copper which had taken on iron either by being buried in soil rich in hematite, or through deposition of iron by ground water. It was hypothesized that the absence of copper carbonate, the green patination ordinarily found on Old Copper specimens, was due to its not having been exposed to the air for any considerable length of time, but indicated that it had lain under water or beneath the ground.

The A. O. Smith test for specific gravity ran 7.39. That this is considerably less than that of metallic copper is explained by the presence of oxides, and the factor of folded metal being less dense than solid metal.

The owner of the specimen was next contacted to check if there was more precise information as to the circumstances of the find beyond that of its location in Section 10, Dekorra Tnshp., Columbia County. The only forthcoming information was that it was a surface find.

The metallic content of the spear point posed an intriguing problem, and our thanks go to the A. O. Smith Corporation for solving it. While meteoric iron was utilized for the making of artifacts by such prehistoric peoples as the Hopewellians of Ohio and the Thule Eskimo, we have as yet no evidence of its use by the prehistoric Indians of Wisconsin.

A DISTRIBUTIONAL STUDY OF THE TURKEY-TAIL POINT

Mary Ellen Didier
University of Chicago

Introduction

The turkey-tail point has long been an object of interest both to the collector of Indian relics and to the archaeologist. Collectors consider it a prized object because it is manufactured of exotic material and it is "aesthetically" appealing. Turkey-tails have fascinated archaeologists because they are indicative of wide-spread trade at a very early time. Charles E. Brown, in his 1930 article, "Turkey-tail Points," marveled at the fact that "in almost every one of several hundred Wisconsin collections in existence today, there is to be seen one or more of these implements," and yet, there is no evidence of manufacture of these points in Wisconsin workshops or village sites. It appears as if most of the specimens were brought into the region (Brown 1930:99-103). He wondered how the hornstone was obtained and transported. Binford, in his report on the Pomranky Site, a Late Archaic burial site in Midland, Michigan, comments that "the presence among the mortuary goods of artifacts (turkey-tails) manufactured of materials obtained as far away as Harrison County, Indiana, is certainly indicative of wide-spread logistics networks for the transference of goods and materials" (Binford 1863a: 190).

The turkey-tail point was so named by collectors because of the seeming resemblance of the base element to a dressed turkey (Ritzenthaler and Niehoff 1958: 117). The turkey-tail point [1] can be generally described as being elongated ellipsoidal in shape; being made almost exclusively of Harrison County "flint"; having both primary and secondary chipping on the blade, the secondary chipping often resulting in patterned scar clusters at points where the ridges between the primary scars approach the lateral edge (see Binford 1963b: 207); having a convex, straight, or bi-vectorial base shape; and exhibiting lateral-lateral, lateral-basal, or lateral-coinci-

[1] **Whenever a turkey-tail blank is mentioned, what is meant is unnotched turkey-tail blade.**

dental points of juncture of the haft element.

Purpose of this paper:

This paper will describe the distribution of the turkey-tail point, both quantitatively and qualitatively, incorporating much new data. By analyzing the regional patterns of variation of the turkey-tail, it will try to determine if these points, as finished products and/or as turkey-tail blanks, or the unworked Harrison County "flint" itself, were being circulated and dispersed during the late phase of the Late Archaic and the Early Woodland time period.[1] Turkey-tail style zones will be delimited (for a discussion of what is meant by style, see page 6), suggestions will be made concerning possible turkey-tail transmission routes, and a hypothesis will be put forth to explain the differential distrbution of turkey-tails.

The turkey-tail point is especially amenable to an analysis that is concerned with defining style zones and interaction between groups, for while it does have a very broad distribution, it is most often manufactured of material that has a restricted locus of availability; and since the turkey-tail is defined stylistically, it may well occur in cultural groups representative of divergent systems and ecological adaptiveness. Once the regional distribution patterns of turkey-tail populations have been determined, a body of data is provided which, when correlated with artifact assemblages and other data, might supply a foundation for understanding the processes of culture change and differentiation operative during the range of time of turkey-tails. Furthermore, by defining style zones in the Late Archaic, a base is established which can be used to compare and contrast style distribution in the Late Archaic with those of the Hopewellian period. These similarities and differences may suggest some of the processes involved in Hopewellian development, and provide the basis for hypotheses concerning its development.

[1] The terms Late Archaic and Early Woodland are used as chronological markers, and are considered to be absolute time periods. The late phase of the Late Archaic dates ca. 1500 B. C. to 500 B. C. The Early Woodland dates ca. 500 B. C. to 100 B. C.

The specific questions asked in this paper are the following: Since the turkey-tail point is found in Wisconsin, Illinois, Indiana, Michigan, Kentucky, Ohio, Missouri, New York, Tennessee, and Ontario, Canada and it is almost always made of material restricted to the southern Illinois - southern Indiana - western Kentucky region, in what form did this material move out of the raw material source area? Was it dispersed as raw material that was locally fashioned into turkey-tails; as turkey-tail blanks, finished by the recipient groups; or as finished turkey-tails made by groups in the raw material source area or elsewhere? By what routes were these items circulated? Can different style zones be defined? Can different patterns of interaction be demonstrated? Just what are the reasons for this interaction? How can the differential distribution of turkey-tails, both quantitatively and qualitatively, be explained?

In an expanded study, many more questions could be asked of these data. Questions that could be posed are: What is the structure of the intergroup relationships within the turkey-tail logistics network?, and, What are the mechanisms that allowed the broad exchange system of which turkey-tails are only a part to come about? I have suggested only some of the questions; certainly there are many others.

Data analyzed:

The material analyzed in this report has been gathered from publications by professionals and amateurs in numerous journals; from the Chicago Natural History Museum, the Milwaukee Public Museum, the Illinois State Museum, the Logan Museum, the Museum of Anthropology, University of Michigan, and from the New York State Museum; from letters received as the result of an appeal for information published in the most far-reaching amateur and professional journals distributed in the Great Lakes and surrounding region; [1] and from personal communication with professional archaeologists and collectors. One regrettable fact is that in the few cases where turkey-tails have been found in primary archaeological

[1] One need only glance at the Site Index for the State of Indiana to see how much information was received in this way.

context, still fewer have been excavated and described by professionals. This is notable in Indiana, where in no situation where turkey-tails were found with associated goods, was the material first seen and described by a professional archaeologist.

A most confusing and harassing part of the data-collecting was sifting through the terminological maze of synonyms for turkey-tails and cache blades. [1] Turkey-tails might be called blades, knives, blanks or turkey-tails. The material of which they are most often made might be called Harrison County "flint", hornstone, black flint or Indiana flint. Cache blades have an even more varied, and consequently, more muddled nomenclature. They have been termed leaf-shaped points, -blades, -implements, -blanks or -arrowheads; spearpoints, or arrowpoints; or simply, flint or chert blanks. In recent literature they have been called ovate-trianguloid chert knives or points (Ritzenthaler and Quimby 1962:247), or ovate-trianguloid cache blades (Faulkner 1960a: 92). They will be called cache blades here.

Because of this vagueness and looseness in descriptive terms, it was often difficult to determine if turkey-tails or cache blades were being discussed. Any point termed "hornstone knife", "hornstone blade", or "black flint knife" was assumed to be a turkey-tail: (a) because of the mention of the word hornstone, since most cache blades, with the exception of Hopewellian disks, are not made of hornstone (and the word disk is almost always included in descriptions of Middle Woodland caches); (b) because a figure or photograph was included with the description, or; (c) because the author, in describing a cache of turkey-tails, called them "black flint knives", when in his article, he was discussing only turkey-tails.

If the present writer could not determine in which category a cache should go on the basis of the words chosen to describe it, the following procedure was employed: if a cache was located in an area where other caches of turkey-tails clustered,

[1] Cache blades are introduced here without any previous mention, and are included in this report for they are often associated in caches and burials with turkey-tails. For specific information concerning them refer to the Site Indexes.

it was plotted as a turkey-tail cache; when the location of a cache fell into an area where both turkey-tail caches and caches of cache blades were numerous, the number of specimens in the cache might determine to which to designate it. When all that was reported was the fact that a cache had been found in X county of X state, this information was disregarded and discarded. The confusing cases outlined above are not too frequent, and decisions of this sort had to be made only for turkey-tails and cache blades found in Wisconsin. Whenever such a case is encountered, its dubious position will be noted by a double asterisk (see Wisconsin Site Index).

Aside from the problem of terminological vageries, the reports and descriptions were often inadequate in view of the questions asked in this paper. Often in a publication, the location of a cache of turkey-tails would be designated by county or township, and, sometimes, only by state; the number of turkey-tails in a cache might or might not be mentioned; only an average measurement of blade length might be offered for an entire cache; and more often then not, especially for Wisconsin materials, no drawing or photograph was included, so the point could not be typed. Since much of the information came from collectors, many interesting observations such as whether the point had polish along the blade ridges, if a cortex was absent or present, and if a broken blade had an old or a modern break were infrequently commented upon, and, therefore, could not be dealt with.

A rather interesting phenomenon has been noticed in the recording of "Conditions of Recovery" of turkey-tails in early versus more recent reports. Although it will not be demonstrated here, it is believed that it could be shown that early reports that describe turkey-tails as being caches not associated with burials were actually parts of burials. These reports describe turkey-tails as simply having been found under an old tree stump or beneath a large rock, when in many cases, because of conditions of poor preservation, the bone was exceedingly difficult to recover, and the few signs that remained were not noticed or ignored. All material used here will be reported just as it has been recorded in the publication quoted.

But this point can be kept in mind when one sees "cache" as as the "Condition of Recovery" in areas like the Southeastern Wisconsin Region (See page 6 and Map III for a definition of this region and other designated).

Many turkey-tails are known about that will not be included in the Site Indexes at the end of this paper, or in other portions of the paper. Many specimens are reported from Wisconsin, with no provenience unit other than state; this is also true, but to a lesser degree, for Indiana, Illinois, and Missouri. Dragoo mentions that turkey-tails are quite frequent in local collections in Shelby County, Indiana (Dragoo 1951:34). Mr. Lewis Binford informed me that he has seen turkey-tails from the Bay County, Michigan area in local Michigan collections (Binford 1963, personal communication). Moorhead records a cache of 96 turkey-tail blanks from Michigan (Moorhead c1900:23-26, Fig. 7). He also reports one specimen from Tennessee (Moorehead c1900:152,, Fig. 218). Brown mentions a cache of 192 turkey-tails from Chesterfield, Ohio (Brown 1907: 62), but this town could not be located.

All turkey-tails which were personally studied were recorded on edge punch cards. Turkey-tail information received in the mail was recorded in the form of outline drawings of the actual specimens by the local collectors. A turkey-tail type designation (according to the typology of Lewis R. Binford as discussed on page 1) was assigned to those specimens which had been recorded on edge punch cards, to those for which outline drawings were available, and to those for which good photographs were at hand. Many times a type designation could be assigned to a specimen, but no variety designation could be determined. Such was the case when a photograph was not clear, or when a collector obviously drew part of the outline drawing free-hand. The Type Designation for all turkey-tail specimens is included in the Site Indexes. It is unfortunate that many turkey-tails recovered as parts of caches could not be traced and typed; caches were split and divided amongst several people, and all of the turkey-tails simply could not be found.

At the end of this paper are Site Maps and Site Indexes.

These give the reader a quick reference to what has been found at each site, and the source from which the information was obtained.

It is certain that more kinds of information about turkey-tails would be useful, and the knowledge of and the typing of more specimens would help to clarify the sometimes hazy picture that the data present. Yet, in the light of the data at hand, a basic outline of the way turkey-tails were being circulated and dispersed in the Western Great Lakes and adjacent regions during the Late Archaic-Early Woodland periods can be drawn. More data ought to add to fill-in gaps in the picture and to clear-up upsolved problems, or, perhaps new data will prove the suggestions proposed here are incorrect, and new explanations will have to be formulated.

PART I

Typology of turkey-tails:

A description of the turkey-tail point has already been given on page I in the Introduction. However, this is by no means a detailed description of the turkey-tail point. Lewis R. Binford, of the University of Chicago, has done a formal analysis of the turkey-tail based primarily on metrical and geometrical attributes according to the scheme presented in his "Proposed Attribute List for the Description and Classification of Projectile Points" (Binford 1963b). Three types have been defined: the Fulton, the Harrison, and the Hebron (Fig. 1). Within the Fulton type eight varieties were distinguished: Dickson, Fulton, Jackson, Kimmel, Knox, Ross, Spoon, and the Stemmed variety. The Harrison type has two varieties: the Mitchell and the Marshall variety. Impressions are that the Hebron has several varieties but they have not been defined as of this time. For a definition and description of the three types and their varieties one should refer to Binford (Binford 1963d, Unpublished manuscript). Hereafter, with the exception of the Hebron type turkey-tail, turkey-tails will be referred to by their varietal names.

Turkey-tail temporal range:

With our present knowledge, turkey-tails can be placed

roughly in a period between 1500 B. C. and 500 B. C. Chart I lists sites that have turkey-tails and C-14 dates.

Chart I. Radiocarbon Dates from Sites Associated with Turkey-tails.

Site	Age	Reference
Andrews	1210 + — 300 B. C.	Crane & Griffin 1960, 34
Oberlander No. 2	998 + — 170 B. C.	Libby 1952, 77
Riverside Cemetery	1083 + — 150 B. C.	Jelinek 1962, 451-477
Sny-Magill Mound 43	470 + — 250 B. C.	Crane & Griffin 1858, 1099
Killarney Bay 1 Mound	80 + — 200 B. C.	Crane & Griffin 1959, 183

This chart needs several clarifications. The Sny-Magill Mound 43 in Clayton County, Iowa is included on this chart, although no turkey-tails have been reported here. However, many other artifacts often associated with turkey-tails have been found. At Oberlander No. 2, the turkey-tail reported was found at the west end of the oval pit of Burial 2, and there is no way of being certain that the site date is also applicable to this turkey-tail. The C-14 date for Riverside Cemetery was taken from a burial where copper artifacts were found, but no turkey-tails, although turkey-tails have been found with other burials at the site. The Killarney Bay Site is very late in terms of a date, and the site is also geographically quite remote from the general distribution of turkey-tails. While it is mentioned, it will not be considered within the time range of turkey-tails. One other site must be mentioned. This is the Pomranky Site, which has not been dated by C-14, but it has been placed at approximately 800 B. C. by comparison with other sites of the same nature that have C-14 dates (Binford 1963a: 191).

Turkey-tail raw materials:

The turkey-tail point is most often manufactured of Harrison County "flint" (sometimes they are made of quartzite or white chert, but such cases are rare). This flint was named after Harrison County, Indiana where many hornstone quarries have been discovered. It has a wide distribution in southern Indiana, southern Illinois, and western Kentucky. Yet,

Fowke points out that while hornstone is found in the subcarboniferous limestones of southern Indiana, and, therefore, does have a wide distribution, only in the vicinity of the Ohio River is the best (by best is meant the flint that is easiest to chip) flint found, and as one goes northward the stone becomes more coarse (and is more difficult to chip) (Fowke 1894: 332). Fowke also mentions that within this flint area, some localities were worked more than others becasue of the high quality of flint in those localities and the easy accessibility of the flint nodules. He states that he has found evidence of quarrying activities especially in Harrison County, Indiana; in the vicinity of Wyndatte Cave, Crawford County, Indiana; Union County and those adjacent to it in Illinois; and Todd and Christian Counties, Kentucky (Fowke 1894:332, 334; Fowke 1928: 528-532). These areas mentioned by Fowke are indicated in solid black lines on Map I.

Turkey-tail function:

Brown considered turkey-tails to be best adapted for use as knives, for the tang is too short and fragile in comparison with the length for them to have been securely hafted and used as spearpoints (Brown 1930:99). Ritzenthaler and Niehoff suggested a non-utilitarian function for these points, and offered use as an ornament as their function (Ritzenthaler and Niehoff 1958:117). On the basis of the fact that turkey-tails have a very narrow dimension between the haft elements, and, therefore, could not have been hafted to a haft that was parallel to the longitudinal axis of the specimen and vigorously used; the context in which they are often found (associated with burials); the presence of polish on the faces of some of the blades suggesting that they had been carried about and rubbed together for some time; and the imported material of which they are manufactured, Binford proposes a socio-technic [1] rather than a technomic function for turkey-

[1] Socio-technic items have their primary functional context in the social subsystem of the total cultural system. They are related to the social life of the group, and they function to articulate individuals into cohesive groups capable of efficiently maintaining themselves and of manipulating the technology (see Binford's discussion of the differences between technomic, sociotechnic, and ideotechnic artifacts; Binford 1962: 219-220).

tails (Binford 1963a: 187).

Cache blades:

It has previously been mentioned in a footnote that cache blades are included in the Site Indexes along with turkey-tail data. By cache blades are meant small, unnotched points that are often ovate-trianguloid in shape (see Ritzenthaler and Quimby 1962:247). They are, to my knowldedge, never made of hornstone, but they are rather made of materials local to the area where they are found, or of materials exotic to the area other than hornstone. They are often found in association with turkey-tails, with or without other artifacts, but they are also found alone. This is especially true in the Saginaw, Kankakee-LaPorte, and Wisconsin regions.

Turkey-tail distribution:

The first step in this research was the collecting of the data. Once all of the data were recorded, the question asked was: Where and in what archaeological context are turkey-tails found? The best and most efficient way to describe where turkey-tails distribute is to record their distribution on maps.

Quantitative and stylistic distribution of turkey-tails:

Turkey-tails were plotted on outline maps in several different ways. Map I gives an over-all view of turkey-tail distribution. Single, surface finds are distinguished from cache, burial and mound finds. All points recognized to be turkey-tails, i. e., all points that were fashioned in such a manner that they were considered to be made in the turkey-tail style are included. Map II a-d plot the three types of turkey-tails and their varieties distinguished within the turkey-tail style. Hence, Maps II a-d describe turkey-tail style zones.

By turkey-tail style is meant the manner in which this particular point form is made that distinguishes it from every other point style. The concept of turkey-tail style includes the geometrical and metrical attributes, as well as flint chipping techniques (see Binford's discussion of turkey-tail types and varieties; Binford 1963d, Unpublished manuscript), which define the range of variation of turkey-tails. It is these geometrical and metrical attributes that define Fulton, Hebron, and Harrison types. A type is "a demonstrable clustering of attributes

observed among specimens of a given class of phenomena" (Binford 1963b: 194). The turkey-tail varieties are subdivisions of turkey-tail types, which were determined on the basis of minor differences in the frequency of certain metrical and geometrical attributes.

While it was thought that the best way to plot turkey-tail styles was to describe each of the three types and their varieties on separate maps, this method has one major disadvantage. When a composite cache is indicated, where more than one type and variety is present, the presence of types other than that type for which the map was intended cannot be shown. For this reason, cache, burial and mound finds are underlined. One will have to consult the Site Indexes in order to know all of the types represented in a particular cache. It must be kept in mind that it often happened that only part of a large cache was available for typing. In many of these cases, the available points did not constitute even half of the cache.

Archaeological context of turkey-tails:

Map I gives one a description of where turkey-tails are found, and Maps II a-d delimit turkey-tail style zones. Now the archaeological context of turkey-tails will be discussed. To facilitate discussion, the area over which turkey-tails distribute has been divided into nine regions. These divisions were made on the basis of the spacial clusterings of turkey-tails and on the basis of the similarity of associated artifacts recorded with turkey-tails. These regions are indicated on Map III. Region I is the Southeastern Wisconsin Region, and Region Ia is the Lake Winnebago Region. Region II is the Kankakee-LaPorte Region, Region III the Central Illinois Region, and Region IIIa the St. Charles Region. Region IV is the Saginaw Region, Region V is the Southern Indiana Region, Region VI the Ohio Region, and Region VII the New York Region.

Southeastern Wisconsin Region and Lake Winnebago Region:

Turkey-tails are reported in these regions along Lake Michigan, and along the Fox, Wolf, and Rock rivers. They cluster in the area between the Rock River and Lake Michigan,

and around Lake Winnebago. If one would plot cache blade distribution, one would note that cache blades cluster in the area around turkey-tails.[1] From the date at hand, only Hebron and Mitchell turkey-tails are found in the Southeastern Wisconsin Region. Besides these two varieties, the Kimmel is also found in the Lake Winnebago Region. All turkey-tails reported in these regions are made of hornstone. However, a specimen from Richland County, Wisconsin, is made of quartzite. This specimen is a Dickson point. Another Dickson point is recorded from Wisconsin with no provenience unit other than state. This specimen is made of white chert. Yet another specimen, also from Wisconsin, exact provenience unknown, was manufactured of Harrison County "flint", but was reworked into a scraper. This specimen has a Mitchell base. This is the only turkey-tail, of all those observed, that was reworked into another artifact.

Four sites have been reported in the Southeastern Wisconsin Region where both turkey-tail and other artifacts have been found together — W-22c, W-22b, W32e, and I-12. Chart 2a lists these sites and the items found at each one. Different treatment of individuals with respect to differential access to certain items is evidenced at W-22B, W-32e, and I-12. At W-22b, an adolescent female received all of the artifacts with the exception of the gorget and shell beads ,Ritzenthaler and Niehoff 1958:117). At W-32e, while it is not explicitly stated, with ten burials only two turkey-tails were recorded, so one or two individuals must have been buried with them (Brown 1923:58; Brown 1924:80). At I-12 one individual was buried with the turkey-tails, and one with a ceremonial blade (Young 1961:21).

Four sites with associated goods are known for the Lake Winnebago Region. At the Chalk Hills Site, W-17, a bundle burial with three turkey-tails and ocher has been reported (Brown 1940:75). In Door County, W-8, a single flexed burial with fifteen turkey-tails and a single stemmed spear point was found (Brown 1924:70; Schumacher 1918:140-141). In Outagamie County, W-21b, a cache is reported with six turkey-tails,

[1] Unfortunately, the maps plotting cache blade distributions could not be included in this publication.

all of different sizes, and seven flint and quartzite spears (Fox 1916:16). At W-27, on the eastern bank of the Wolf River, a cache was found with six turkey-tails, forty leaf-shaped points, and a socketed spear point (Brown 1907:68). Just what these differences between the Lake Winnebago and the Southeastern Wisconsin regions means cannot be understood at present. A much larger sample of sites is certainly needed if these differences are to be interpreted.

Kankakee--LaPorte Region:

Turkey-tails are found in this Region along Lake Michigan, along the Kankakee River, and along the St. Joseph River. The Hebron, Mitchell, Kimmel, Knox and Dickson are recorded in this Region.

Six sites have been reported which have turkey-tails and associated artifacts — In-15a, In-15c, In-27, In-7, M-4a and M-4b (see Chart 2a). All of these sites are characterized by a single burial interred in sand or gravel. When burial position of the body could be determined, it was, with the possible exception of one case (In-7), always flexed. Besides turkey-tails, cache blades were found with most of these burials, as were ocher and copper beads frequently observed. The turkey-tails at the Kimmel Site (M-4a) were broken prior to deposition (Papworth 1958:51-56). At In-15c, one of the twenty-four turkey-tails is made of white chert. This point is a Hebron turkey-tail.

Saginaw Region:

This Region is represented by a clustering of cache and burial finds distributed along the rivers running in the Saginaw River, and finally into Lake Huron. There are also a great number of caches of cache blades in the Region. Turkey-tails of the Hebron, Mitchell, Fulton and Dickson variety have been reported here. All are manufactured of hornstone. For only one, the Pomranky Site (M-10), is a site report available. Here cremated and uncremated remains of at least four individuals, all adolescents and children, are reported (Binford 1963a: 180-183). At the Andrews Site (M-12s), flexed and bundle burials, and cremations were observed (Ritzenthaler and Quimby 1962: 265). Refer to Chart 2b for a list of these sites.

Central Illinois Region and St. Charles Region:

Turkey-tails in the Central Illinois Region cluster along the central part of the Illinois River. Most of the turkey-tails in this Region have been recovered in association with burials in mounds; only a few in association with other types of burials. The size of the caches of turkey-tails in this Region is small in comparison with those in other regions — the largest reported cache consisting of thirteen turkey-tails. Not many turkey-tails could be typed, but considering the few specimens available, the Fulton, Spoon, and Dickson have been reported. Unlike the Southeastern Wisconsin, Kankakee-LaPorte, Saginaw and Southern Indiana regions, only one Hebron and two Mitchell (one manufactured of white chert) has been report-Mitchell (one manufactured of white chert) have been report-in Brown County. It is a Fulton point.

Six sites have been reported containing both turkey-tails and other artifacts — I-4a, I-4f, I-4g, 1-15c, I-15f (see Chart 2c). At Morton F° 11 (I-4f) flexed, semi-flexed, disarticulated skeletons, cremations and bundle burials have been described. Burial No. 4, an adult male in semi-flexed position, was buried with the one turkey-tail found in the mound together with six cache blades, ocher, one spear point, one drill, a celt and oval implement, and child's teeth near his knee (Cole and Deuel, Field Book No. 1). At the Banner Site (I-4a) fifteen skeletons were buried in a mound, four of them infants and children. Only four turkey-tails were found, so certain individuals must have had them, while others did not, although Wray does not mention this fact (Wray 1937: 82). The Sam Parker and Henry Jacques Mounds in Peoria County have not been fully explored, so not much can be said about them. No turkey-tails have been found at either the Rench Site, I-15b, (Buis 1944: 10); the Morse Site, I-4h, (Morse 1959: 193-207); or an unnamed site in Peoria County, I-15a, (Anonymous 1951: 118), but these sites must be mentioned as many of the artifacts often associated with turkey-tails have been reported at these sites.

In the St. Charles Region are a group of sites that have been named the Titterington Focus. The only site included in this Focus that has turkey-tails is the Elm Point Site in St. Charles,

Missouri (Mo-1). Here 47(?) turkey-tails were found with a stemmed point, seven plumb bobs, a tube pipe, ocher, a burial in a mound enclosed in limestone slabs, and perhaps a grooved axe (Titterington 1950:24). One other of these limestone slab burials has been found just five miles southwest of St. Charles, and three in Calhoun County, Illinois, and two in Jersey County, Illinois. In addition, there are several sites that seem to be related in the sense that they have the limestone slab burials, but not some of the other Titterington-like traits, in Brown County, Illinois (Titterington 1950:19-24). None of these sites have any turkey-tails. Just what this Focus is, and how it relates to the sites in the Central Illinois Region is unknown. However, some "Titterington-like" points have been found at the Oak Grove Site (In-15c) in Lake County, Indiana (A. Johnson Correspondence).

Southern Indiana Region:

This is the Region where the Harrison County "flint" is found. Turkey-tails distribute along all of the major river valleys. They distribute quantitatively in two different ways within the Region. In the southwestern corner — the area roughly described by the three mining loci mentioned by Fowke, and coextensive with the raw material, mostly surface finds, and only three caches are all homogeneous in content. The turkey-tails represented in them are the Hebron and the Marshall. There are also six Jackson surface finds. [1]

In the northeastern area, there are surface finds of turkey-tails, but these tend to group around the three high density loci of turkey-tail cache, burial, and mound find clusters; one on the Wabash River, one on the East Fork of the White River, and one on the West Fork of the White River. Just what these high density clusters represent is difficult to assess with such limited data. Perhaps they represent population clusters of groups who consolidated and dispersed turkey-tails, and who were perhaps on a higher level of socio-cultural complexity than groups in the southwestern portion of this Region. This is no more than a suggestion, and must be tested with field

[1] The six Jackson specimens are suspect, and may be turkey-tail fakes. However, as this cannot be stated with certainty at this time, they will not be excluded from this paper.

excavation. Every type and variety of turkey-tail, with the exception of the Jackson is found in this sector of the Region. With the exception of the Stemmed, Jackson and Ross, every type and variety is represented here in a composite cache. All turkey-tails from this Region are of Harrison County "flint".

Only at three sites where turkey-tails have been reported were associated goods also found. In-8b consisted of one burial in a knoll with a cache of twenty-one and another of five turkey-tails, ocher, two celts, and a bust-type birdstone, (Townsend 1959:192-195). In-29b had a burial in a mound with six turkey-tails and one birdstone and other slate objects, and pottery (Dragoo 1951:29). In-9 is reported to be a cache of six turkey-tails, ocher, one celt, and one bust-type birdstone. (Townsend 1959:190-192). Refer to Chart 2d for a list of these sites.

Ohio Region:

In this Region, turkey-tails distribute along the Scioto and Miami rivers. Hebron, Mitchell, Marshall, Fulton, Ross and Stemmed points have been reported here. All turkey-tails are of Harrison County "flint". In the seven cache, burial, and mound finds more than 360 turkey-tails are recorded — more than were found per cache, burial, or mound in any other region.

The Spetnagle Cache, (O-8a), consisted of over two-hundred specimens with no associated goods. All two-hundred-plus specimens were broken prior to deposition in the cache (Anonymous 1923:640). At Bourneville (O-8b) fifty turkey-tails, all broken as if by heat, were found in a small heap in an ash layer near the center of a mound. Two fragmentary skeletons were also reported (Moorehead 1900:141, Fig. X; 153). In the McKenzie Mounds, (O-7), tibiae surrounded by turkey-tails were found in the large mound. Adena traits, apparently, although not directly associated with the turkey-tails, were also present (Moorehead 1900:160-161, Fig. XXII).

New York Region:

Turkey-tails have been recovered only as single surface finds in the New York Region. They have been found in the Finger Lakes area. The Fulton, Ross, Hebron, and Marshall

varieties have been reported. Two of these turkey-tails are of white chert. Only one could be typed, and is a Fulton point.

Turkey-tail Association:

In a discussion of the archaeological context in which turkey-tails are found a section must be included which describes the association of turkey-tail varieties in composite caches.

Mitchell Variety:

Associated with: Knox, Stemmed, Fulton, Ross; Marshall; Hebron.

Not associated with: Dickson, Spoon, Kimmel, Jackson.

Marshall Variety:

Associated with: Stemmed, Fulton, Ross; Mitchell; Hebron.

Not associated with: Dickson, Spoon, Knox, Kimmel, Jackson.

Hebron Variety:

Associated with: Fulton, Mitchell, Marshall.

Not associated with: Dickson, Spoon, Knox, Stemmed, Jackson, Ross.

Fulton Variety:

Associated with. Spoon, Knox; Mitchell, Marshall; Hebron.

Not associated with: Dickson, Kimmel, Stemmed, Jackson, Ross.

Ross Variety:

Associated with: Stemmed; Mitchell, Marshall.

Not associated with: Dickson, Spoon, Knox, Kimmel, Fulton, Jackson; Hebron.

Stemmed Variety:

Associated with: Ross; Mitchell, Marshall.

Not associated with: Dickson, Spoon, Knox, Kimmel, Fulton, Jackson; Hebron.

Knox Variety:

Associated with: Kimmel, Fulton; Mitchell.

Not associated with: Dickson, Spoon, Stemmed, Jackson, Ross; Marshall; Hebron.

Kimmel Variety:

Associated with: Dickson, Knox.

Not associated with: Spoon, Stemmed, Fulton, Jackson, Ross; Mitchell, Marshall; Hebron.

Spoon Variety:

Associated with: Dickson, Fulton.

Not associated with: Knox, Kimmel, Stemmed, Jackson, Ross; Mitchell, Marshall; Hebron.

Dickson Variety:

Associated with: Spoon, Kimmel.

Not associated with: Knox, Stemmed, Fulton, Jackson, Ross, Mitchell, Marshall, Hebron.

Jackson Variety:

Associated with: no other variety.

NOTES

SITES WITH TURKEY-TAILS AND ASSOCIATED ARTIFACTS:

SOUTHEASTERN WISCONSIN AND KANKAKEE-LAPORTE REGIONS

CHART 2a

Site No.	Burial Type	t-t	c.b.	Ochre	Cer. blade	Notched pts.	Stemmed pts.	"Titterington type" pt.	Thiensville pt.	Axe	Copper	Cu. beads.	Rolled	Tubular	Cu. awl	Cu. crescent-shaped object	Cu. gorget	Cu. celt	Cu. axe	Cu. spear	Cu. ceremonial blade	Shell beads (marine)	Bar amulet	Gorget 3-holed (stone)	Galena	
In-15a	1 adult Flexed Sand ridge	3?		X	1	1							45		1				3				1		X	
In-15c	1 burial sand hill	24	** 46	X	4			3	1		X															
In-27	1 adult male (?) Flexed (?) Sand Knoll	7	320 ?										125 ?													

In-7	1 adult female Flexed or extended Sand Knoll	1 **	1 **			X							X												
I-12	6? burials #1 Flexed	23		X																					
	2 with artifacts Gravel pit #2			X	1																				
W-22b	1 adolescent female flexed	5	55	X		1			1				X	X	4									X	
	2 males-flexed ? Sandy crest																				X		1		
W-22c	1 skeleton Gravel	1	20		4	2	3			1								1			1				
W-32e	10 skeletons Gravel pit	2	10							1					1					1					
M-4a	Adult Flexed (?) Gravel terrace	4	470 (?)										33			1	1								
M-4b	One burial Flexed	18								1															

Chart 2b

SITES WITH TURKEY-TAILS AND ASSOCIATED ARTIFACTS

Saginaw Region

Site No.	Burial Type	t-t	c.b	Ochre	Notched pts.	Stemmed pts.	Celt (stone)	Copper	Cu. beads	Rolled	Tubular	Cu. awl	Cu. needle	Cu. celt	Cu. harpoon	Hidstone	Limonites
M-10	Cremations Uncremated remains Children and adolescents Sand ridge	14	516	X	X												X
M-12s	Flexed Bundle burials Cremations Sand ridge	4	300?	X	X	X	X			X	X	X	X	X	1	4	

Central Illinois Region

Site No.	Burial Type	t-t	c.b	Ochre	Cer. blade	Notched pts.	Stemmed pts.	Oval Implement	Scraper	Drill	Celt	Copper	Cu. beads	Rolled	Tubular	Cu. awls	Cu. plaque	Pottery	Shell beads (Marginella)	Shell spoon	Shell circular gorgets	Shell gorget 2-holed	Shell crescentic ornament	Gorget 2-holed (stone)	Galena
I-4a	15 burials Flexed 4 infants & children Mound	4		X	** 1									27				X	4	1					X
I-4f	Burial #4 Adult male Semi-flexed Mound	1	6	X			1	1		1	1														
	Flexed, semiflexed Disarticulated skeletons that perhaps were bundle burials & cremations		X	X		X	X		X	X	1				16	1	1	X	12		2	1			X
I-4g	3 fully flexed 3 ? 1 disarticulated (?) 3 had artifacts very low mound	1	3	X								X	7?			1			1		2		1		X
I-15c	Mound	5	22	X		1	1									1		X						** 1	
I 15e	1 fragment of human (?) tooth Mound	13	** 1	X		1							11?			2									X
I 15f	Bone frag. (human)	6	100 ?	X																					X

Chart 2d

SITES WITH TURKEY-TAILS AND ASSORTED ARTIFACTS

Site No.	Burial Type	t-t	Ochre	Celt	Birdstone (bust-type)	Pottery
In-8b	1 Burial Knoll	21 5	X	2	1	
In-9		6	X	1	1	
In-29b	1 Burial Mound	6			1	X

KEY FOR CHARTS 2a-d

X	equals	present, but exact number of artifacts not known.
**	equals	there is some question about placing the artifact in this particular category either because it was not clear that the artifact was directly associated with the other items, or, because the description of the artifact was vague and I could not be positive from the description of exactly what the artifact was.
?	equals	number quoted approximates, but is not the exact number of specimens observed at the site. Only this approximate number was recorded in the published report.

NOTE: For Chart 2 references, refer to Site Indexes.

Chart 3

Total number of turkey-tails recorded by region

Region	Surface	Cache	Burial	Mound	Total no. of turkey-tails
Se. Wisconsin	9 9	9 72	5 56	2 21	158+
L. Winnebago	3 3	5 25+	2 19		47+
Kankakee-La P.	5 5	4 116	6 57		179+
Central Ill.	3 3	2 8	1 6	7 26	43+
St. Charles	6 6	2 6+	1 48		60+
Saginaw	3 3		4 19+		22+
Southern Ind.	31 31	12 202	1 42	2 32	307+
Ohio	6 6	4 307+	1 ?	2 103	416+
New York	10 10				10

Total number of turkey-tails recorded by state

State	Surface	Cache	Burial	Mound	Total no. of turkey-tails
Illinois	25 25	5? 21	2 29	7 26	101+
Indiana	36 36	15 282	5 77	2 32	427+
Kentucky	12 12	2 37			49
Michigan	8 8	4 89	6 41		138+
Missouri			1 48+		48+
New York	10 10				10
Ohio	6 6	3 255+	1 ?	2 103	364+
Tennessee	1? 1				1
Wisconsin	16 16	16 112	6 52	2 21	201+
Ontario, C.				1 1	1

KEY: TOP COLUMN equals the number of t-t surface, cache, burial, or mound finds recorded in each region or state.

BOTTOM COLUMN equals no. of t-t recovered in each archaeological context.

\+ equals more than number indicated, but exact number unknown.

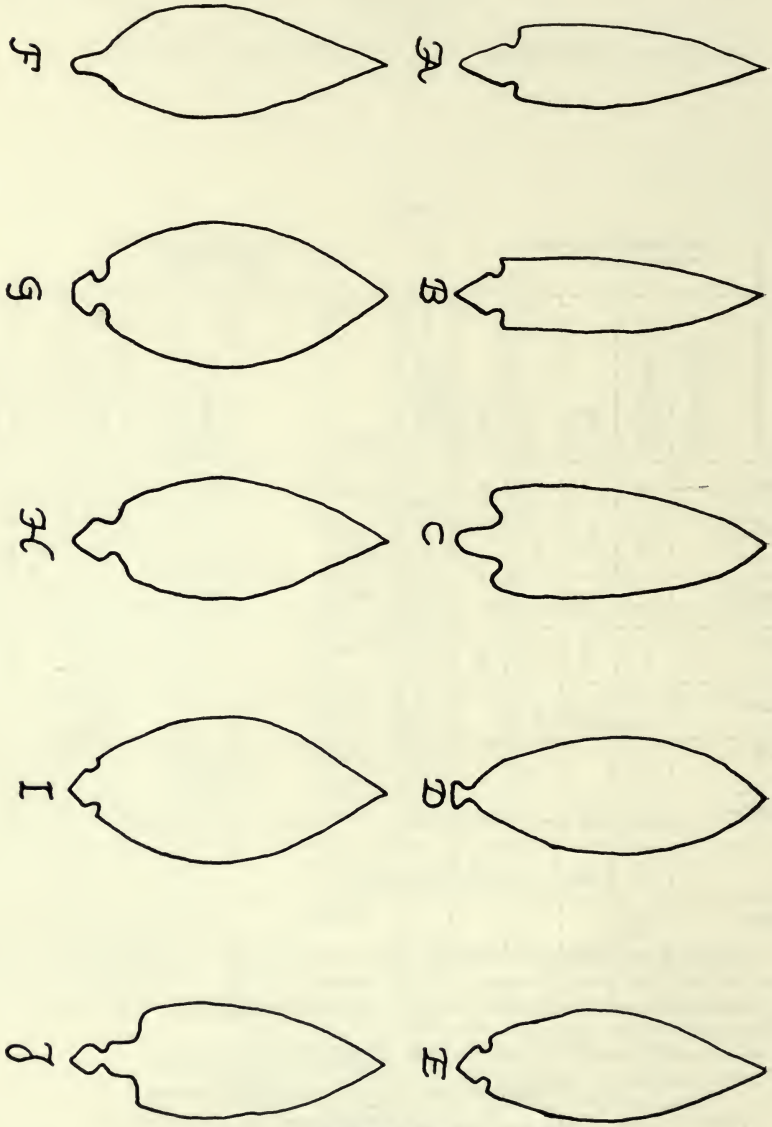

FIG. 1 — TURKEY-TAIL TYPES

TYPE	VARIETY	TYPE	VARIETY
A. HARRISON	Marshall	F. FULTON	Kimmel
B. HARRISON	Mitchell	G. FULTON	Knox
C. HEBRON		H. FULTON	Ross
D. FULTON	Dickson	I. FULTON	Spoon
E. FULTON	Fulton	J. FULTON	Stemmed

PART II

Dispersion and circulation of turkey-tails:

Now that it has been shown where and in what archaeological context turkey-tails are found, the following question can be posed: In what form were turkey-tails circulated and dispersed over the broad area where they are found?

The Southern Indiana Region is the raw material source area. Groups in this Region had at least to mine the flint to make it available for circulation. This fact is supported by Fowke's observations of aboriginal mining activities in the Region (Fowke 1928). Yet, Fowke further states that along the Ohio River between Mauckport and New Amsterdam "the river shore is strewn with chips, flakes, spalls, and fragments, which show every process of manufacture from the first blocking-out to the final minute touches" (Fowke 1928:256). He also points out that flakes, chips, and spalls are found in profusion in many other places in the Region. The presence, therefore, of all three turkey-tail types and all of their varieties here, suggests that these groups were not only mining the flint, but that they were manufacturing turkey-tails of perhaps all of the types and varieties.

The exclusive, or almost exclusive distribution of the Jackson, Ross, Knox, Stemmed, and Marshall here indicates that these varieties were not only made in the Region, but also that they were kept almost exclusively in the Region. It is logical to postulate that the Hebron and Mitchell were also manufactured in the Southern Indian Region. Otherwise, the proposition must be offered that the raw material was transported out of the Region, and the Hebron and Mitchell were made in the Kankakee-LaPorte or the Southeastern Wisconsin Region, and "traded" back into the area in considerable numbers. This does not seem feasible if for no other reason than the distance factor. Likewise, there is very little evidence in the form of hornstone chipping debris in these regions to my knowledge. Certainly the presence of caches and surface finds of Hebron and Mitchell turkey-tail blanks in the Kankakee - LaPorte Region, and several in Wisconsin and Michigan, indicates that turkey-tail blanks, as well as the finished turkey-tails, were circulated outside of the Region.

Since the Kimmel, Spoon, Fulton, and Dickson are also found in the Southern Indiana Region, it is possible that these varieties were made in any of the other regions where they are found. To be able to say where these varieties were made requires additional information such as a detailed study of the specimens available in terms of metrical and geometrical attributes and flint chipping techniques, the recovery and study of more specimens of these varieties, and a study of the flint itself to determine if there are differences in the hornstone obtained from different localities.

If groups in the Southern Indiana Region were mining hornstone, making turkey-tails and turkey-tail blanks, and moving them out (along with some hornstone nodules), the Kankakee-LaPorte Region could be expected to be a crucial region geographically in an exchange system with the North. Groups here would control the flow of turkey-tails from Southern Indiana into the Southeastern Wisconsin Region, the Lake Winnebago Region, and the Saginaw Region. The suggestion that groups in the Kankakee-LaPorte Region occupy a key logistics position with respect to the circulating of turkey-tails into the Wisconsin and Michigan regions is supported by the fact that the Dickson, Kimmel, Knox, Fulton, Hebron, and Mitchell, i. e., all of the varieties with the exception (in terms of available data) of the Ross that were circulated outside of the Southern Indiana Region, are found here. And if the turkey-tail distribution as seen on Map I is an accurate account of the way turkey-tails distribute, it is certainly through groups in this Region that they were passed. Groups in the Kankakee-LaPorte Region were circulating turkey-tails and turkey-tail blanks to groups in the Southeastern Wisconsin Region and to groups in the Saginaw Region. Whether these groups were circulating turkey-tails to groups in the Central Illinois Region, or whether these groups were receiving turkey-tails from groups in the Central Illinois Region cannot be determined now.

In moving from groups in the Kankakee-LaPorte Region to groups in Wisconsin, some sort of selection took place, for only the Hebron and Mitchell varieties are reported in the Southeastern Wisconsin Region, and these two varieties plus

the Kimmel in the Lake Winnebago Region. As was stated before, the area of manufacture of the Kimmel is unknown. Perhaps it was manufactured in the Lake Winnebago Region. An interesting phenomenon is suggested by the presence of the two Dickson turkey-tails, found in Wisconsin, but in areas outside of the Southeastern Wisconsin or Lake Winnebago Regions. One of these specimens is from Richland County (W-24d), and is made of local quartzite (Brown 1907:62). The other is made of white chert, its exact provenience unknown (Logan Museum, No. 210). No specimens of this variety have been reported in Wisconsin made of Harrison County "flint". It seems that actual specimens of this variety were not circulated into what is now Wisconsin. However, the Dickson style concept was known, and apparently locally interpreted.

The Central Illinois Region and the St. Charles Region are difficult to discuss for so few of the turkey-tails reported in publications could be typed. Therefore, it is hard to say if the sample available is representative. While it cannot be determined if the Hebron and Mitchell turkey-tails were brought into they Region via groups in the Kankakee-LaPorte or the Southern Indiana regions, this particular interaction did not bring these varieties into the Region. From the distribution and the limited number of specimens of Spoon and Dickson, the only statement that can be made concerning them is that possibly these varieties were made by groups in the Region. The distribution of the Fulton variety might suggest that it was being manufactured in both the Central Illinois and Southern Indiana regions. This variety was widely circulated, and is found everywhere where turkey-tails have been reported with the exception of the Southeastern Wisconsin Region. The absence of this variety in the Wisconsin Region may be the fault of incomplete data, or it may be that groups in the Wisconsin Region did not participate in an exchange of turkey-tails that involved the circulation of varieties found in the Central Illinois Region (i. e., Dickson, Spoon and Fulton).

The Central Illinois Region is distinctive from all other regions in the sense that groups in the Region do not seem to have participated to any great extent in the exchange of tur-

key-tails that were manufactured in the Southern Indiana Region, unless it could be determined that the Spoon, Dickson and Fulton were made in the Southern Indiana Region. These groups may have participated in this turkey-tail logistics network in the sense that they got hornstone; made their own distinctive turkey-tail varieties; circulated the Spoon and Dickson only in very limited numbers; circulated the Fulton widely; and received very few "outside" varieties.

The Saginaw Region apparently is a recipient region in the turkey-tail logistics network. There is no evidence that turkey-tails were manufactured here, yet the Hebron, Mitchell, Fulton, and Dickson were circulated to groups in the Region via groups in the Kankakee-LaPorte Region.

Only nine turkey-tails have been reported in the New York Region. They are all single surface finds. This material is so scanty that not much can be said except to note that turkey-tails have been found here.

Turkey-tail logistics routes:

Turkey-tails must have been circulated along all of the major waterways over the area where they are found. From the Southern Indiana Region, they were probably circulated up the Wabash River into the Kankakee Region. From this Region, they were moved along the Kankakee and the Fox Rivers, and Lake Michigan into Wisconsin. From the Kankakee-LePorte Region, they were also circulated along the eastern shore of Lake Michigan, and diagonally across Michigan into the Saginaw Region. In the "southern area", turkey-tails were dispersed along the Ohio and Mississippi rivers, and along the Illinois river. They could have been transported via Lakes Huron, Erie, and Ontario into the New York Finger Lakes Region; or they could have been circulated along the Ohio, Allegheny and Genesee rivers into the Region.

Differential distribution of turkey-tail styles:

Not only were turkey-tails being circulated and exchanged over vast areas, but they were being exchanged in different patterns of between-group interaction. In looking at Maps IIa-d, it is apparent that there are different configurations of style distribution — some varieties have a very restricted dis-

tribution — some are found over a very broad area; some varieties appear only in limited numbers in caches that are relatively small in size, and these varieties have a very scattered and dispersed distribution — some varieties are found in great numbers in large caches, and these varieties distribute in several regions.

The Jackson and Knox are confined almost entirely to the southern Indiana Region; the Stemmed, Ross, and Marshall have a continuous distribution in the Southern Indiana and Ohio regions. All of these varieties were made in the Southern Indiana Region, occur almost exclusively here, and are reported more often as surface finds than as cache finds. They are unlike the Mitchell, Hebron and Fulton in that they are not widely circulated outside of the Region, and that they are found so frequently within the Region as surface finds. These facts considered together may suggest that these varieties functioned to reinforce group identity for groups in these regions. This can be opposed to the "Condition of Recovery" of turkey-tails in other regions where turkey-tails most frequently occur in caches with burials, and probably function in a different way, i. e., for status communication. However the Knox, Ross, Stemmed, and Marshall do occur in caches, and they may also have functioned as status communicative items for certain individuals.

While the varieties just mentioned have a very restricted distribution, the Hebron, Mitchell, and Fulton are found over a very broad area. The Hebron and Mitchell distribution indicate a "Y" shaped pattern of interaction with the Southern Indiana Region as the base of the figure, the Wisconsin regions at one end, the Saginaw Region at the other end, and the Kankakee-LaPorte Region in the middle (the Kimmel can also be considered within this "Y" pattern). There is strong interaction between groups within the "Y" pattern, and very little interaction with groups outside of the "Y" such as those in Central Illinois and New York.

Within this "Y" pattern, the Hebron and Mitchell varieties exhibit a slightly different distributional pattern as one moves northward from southern Indiana. From the data available, it appears that the Hebron is found in greater numbers than

the Mitchell in the northern regions. The Mitchell is often represented by a single specimen in a cache with several Hebron points. Just what this difference means cannot be understood at present.

The Fulton is also widely distributed. It is found for the most part in the Southern Indiana, Central Illinois, St. Charles, and Kankakee-LaPorte regions. None are recorded in the Wisconsin regions. The Fulton, together with the Spoon and Dickson present a pattern of interaction that could roughly be represented as a diagonally topped "T".

The distribution of the Kimmel, Spoon, and Dickson, while fitting into the "T" or "Y" pattern, is unlike the distribution of the other varieties in that these varieties have rarely been reported as surface finds; they occur in an infrequent and scattered distribution in contrast to the Mitchell, Hebron, etc.; and they are found in relatively small caches (caches of five or six turkey-tails are frequent, although these varieties have been reported in caches of twenty and twenty-one specimens) in opposition to the Mitchell, for example, which has been observed in more than one cache of at least sixty-five specimens. This distributional difference may be the reflection of stylistic change through time; however, as was previously stated, time cannot be dealt with in any detail. On the other hand, this difference may suggest that these varieties were being exchanged in a different social or economic context than the other varieties. However, no answer can be given to this query now, and most questions that can be raised concerning the distribution just described cannot be answered with the data presently available.

Explanation of the differential distribution of turkey-tails:

Having described the quantitative and qualitative distribution of turkey-tails, and having demonstrated the movement of turkey-tails and turkey-tail blanks from groups in the Southern Indiana Region to and through groups in the Kankakee-LaPorte Region to groups in Wisconsin and Saginaw, the question can be asked: How can the differential distribution of turkey-tails be explained? What are the reasons for this interaction? Why are there so many turkey-tail caches in the Wisconsin regions?, and: Why are these caches clustered

within these areas in the southeastern portion of the state and not everywhere in the state?

It is suggested that the explanation for turkey-tail distribution must be sought not just in terms of the circulation and dispersion of Harrison County "flint", but in the exchange of flint for copper — this is basically a flint-copper exchange system. The hypothesis can be offered that the distribution of turkey-tails can be explained in terms of two factors: (1) the importance of the geographical position of the groups interacting in this exchange system with respect to the dispersion, circulation, and control of flint and/or copper, and (2) level of cultural complexity [1] of the groups involved in this interaction network. The distribution of turkey-tails will be discussed by region principally in terms of these two factors. However, when other factors are thought to be significant, they will also be discussed.

The distribution of turkey-tails in the Southern Indiana Region can certainly be explained in terms of the location of the groups here in relation to the flint supply. Turkey-tails distribute only along the major waterways, and not outside of them; all varieties are found here, most, if not all made in the Region; and the few very large caches (40 and 65 specimens) in the Region are very close to the source of the flint in contrast to the smaller caches (5 to 20 specimens) that occur as one moves northward from the source area. Taking the size of all of the caches in the Region into consideration, it is feasible that certain individuals might have had access to a larger-than-would-be-expected number of turkey-tails just because they were situated closer to the flint source, or because these individuals were experts in their manufacture.

The almost exclusive distribution of single surface finds of turkey-tails within the area roughly transcribed by the three

[1] This concept has been discussed by Sahlins and Service. The idea of a higher or more complicated level of organization must be embraced within the idea of "level of integration". The idea of level of integration can be broken down into three aspects. An organism or a culture is on a higher level of integration than another when it has more parts and subparts; When its parts are more specialized; and when the whole is more effectively integrated (Sahlins and Service c1960:21-22, 35-36).

loci of hornstone mining activities (refer to Map I) in the southern portion of the Southern Indiana Region is strikingly in contrast to the low proportion of single surface finds to cache, burial or mound finds in any and all other areas. This marked difference might suggest that turkey-tails functioned in a different way in the groups in the raw material area than they did in groups in other areas. Yet, the alternative suggestion can be made that turkey-tails functioned in a similar way in all groups where they are found, and that the difference here is a reflection of the small size of groups in this portion of the Region. The rather thinly scattered surface finds and only three caches might suggest the area was not densely populated, and, accordingly, the use of items for the communication of status would be expected to be low.

Turkey-tails cluster in the southeastern portion of Wisconsin in the regions designated as the Southeastern Wisconsin and Lake Winnebago regions. One can immediately ask: Just why are there so many caches in Wisconsin, a region that is a considerable distance from the hornstone source area? And why are the caches all clustered in the southeastern part of the state? The explanation of turkey-tail distribution in Wisconsin must be sought in terms of the copper supply and the circulation and dispersion of this item. Fogel indicates that the area near the junction of the Menominee River and Green Bay (the Riverside Cemetery area), at least for the late phase of the Late Archaic, is assumed to have been an important nucleus of copper manufacturing activity (Fogel 1963:162). He also suggests that not only was copper transported along the lakes and streams running right through the area where turkey-tails cluster, but that during the late phase of the Late Archaic, the volume of copper flow was heaviest over these routes (Fogel 1963:173. Fig. 19). Therefore, the hypothesis can be made that groups located in the Southeastern Wisconsin and Lake Winnebago regions occupied key logistics positions with respect to the control of and the transmission of copper to other groups, and that these groups received turkey-tails in exchange for copper. Perhaps the "neighboring groups" (represented by the distribution of cache blades) who lived in the fringe areas, did not have access to turkey-tails because they were not situated in these important logis-

tics positions. Yet, it is also possible that the cache blade distribution represents groups that were not related in any way to the copper-flint exchange.

How can the large number of caches in Wisconsin, especially in the Southeastern Wisconsin Region, be explained? Binford has offered a suggestion that groups represented by the Old Copper complex were groups with a band level of socio-cultural integration, and that these groups had an egalitarian system of status grading (Binford 1962:223). In groups that have an egalitarian system of status grading, Binford states, "the degree to which socio-technic symbols of status will be utilized within an egalitarian system should largely be a function of group size and the intensity of constancy of personal acquaintance among all individuals composing the society" (Binford 1962:222).

The archaeological remains, in general, are indeed scanty in the Southeastern Wisconsin Region, and, in fact, there are only two sites, the Thiensville and Port Washington sites, for which there are adequate reports. These sites have both copper artifacts and turkey-tails, and have been classified as Copper Archaic by Fogel (Fogel 1963). They have been classified as Red Ocher sites by other writers. In any case, no matter what term is used, the archaeological remains here do suggest that these groups were on the band level of general cultural development. And it is in the band level of organization that one finds the egalitarian system of status grading to be dominant. Therefore, in the Southeastern Wisconsin Region, turkey-tails may have functioned as status symbols in cultural systems with an egalitarian system of status grading. If this suggestion is correct, then the number of caches in this Region might be a reflection of a considerably larger population, and, also, might be related to the widespread between-group interaction that must have taken place in the exchange of copper.

The strategic position of groups in the Kankakee-LaPorte Region with respect to the circulation of turkey-tails to groups in Wisconsin and Michigan has already been discussed. As has been previously pointed out, both the distribution of turkey-tails along the Kankakee and St. Joseph rivers and Lake

Michigan, and the presence of all with the exception of one of the varieties that were circulated outside of the Southern Indiana Region substantiates this view. Since the factor of copper has been introduced, it can be added, that not only were groups here circulating turkey-tails northwards, but they were likewise circulating copper southwards. Fogel states that in the late phase of the Lake Archaic "Illinois (i. e., groups in the Central Illinois Region) has entered prominently into copper utilization for the first time" (Fogel 1963: 165). While it could not be demonstrated that groups in the Kankakee-LaPorte Region played a significant role in the circulation of turkey-tails into the Central Illinois Region, it is certain that these groups played a very important role in the dispersion of copper to the Central Illinois groups.

How can the distribution of turkey-tails in the Central Illinois Region be explained? Certainly this Region was not in the main line of the flint-copper exchange. However, groups here may have occupied an advantageous geographic position with respect to the exchange of other items with groups in Indiana and Wisconsin. During Hopewellian times, groups in this Region did carry on a tremendous amount of trade with other groups in the north and in the south; groups in this Region may have been doing the same, but to a lesser degree, already in the Late Archaic - Early Woodland time period. It is probable that galena and marine shell found in some sites and white chert reported in Wisconsin sites and sites in the Kankakee-LaPorte Region were obtained in "trade" from groups in the Central Illinois Region. Yet, while these groups were exchanging various items with groups in Wisconsin and northern Indiana, the fact that they did so does not explain the turkey-tail distribution here.

The turkey-tail distribution in Illinois is certainly striking. Glancing at Map I, one will note that they distribute all along the Mississippi River, and only along the Mississippi (they are not found up the Kaskaskia, for example) up to the junction of the Mississippi and Illinois rivers. At this point turkey-tails distribute up the Illnois, but they do not continue along the Mississippi. The turkey-tail distribution can be correlated with the Copper Archaic sites in this Region, and the distri-

bution is identical (in fact, some, but not all of the sites Fogel has plotted as Copper Archaic sites also contain turkey-tails) (Fogel 1963:147, Fig. 3). Therefore, it would seem that the turkey-tail distribution in the Central Illinois Region is, like the copper distribution, related to and must be explained in terms of, the apparent beginnings of more complex patterns of social organizations of groups in this Region.

The only data available with which the apparent beginnings of a more complex social system can be observed for these turkey-tail sites are in the contex of mortuary customs. It is held that mortuary customs, however, are not an isolated part of the socio-cultural system, but are intimately related to the whole system, and that elements from the technological, sociological, and ideological sub-systems of the cultural system are represented in burial customs.

While the data from all of the regions are scanty, with what data there are, a comparison can be made between the mortuary customs of the Central Illinois groups and groups in Wisconsin and Indiana. Three aspects of mortuary customs can be examined: preparation of the grave, preparation of the body, and the associated artifacts.

Many of the burials in the Central Illinois Region are in large mounds, as opposed to almost no mounds in the Wisconsin regions, none in the Kankakee-LaPorte Region, and small mounds or knolls in the Southern Indian Region. The mounds in the Central Illinois Region were evidently made for group burials; the mounds in the Southern Indiana Region for single individuals. At Morton F° 11, flexed, semi-flexed and disarticulated skeletons that perhaps were bundle burials and cremations are reported. In contrast, the body position in burials in the Wisconsin and Kankakee-LaPorte regions is most often flexed, and if not flexed, the body is in an extended position. No information on body position was available for the Southern Indiana sites. Also, in the Central Illinois Region burials, not only turkey-tails and copper are found, but also a considerable number of marine shell artifacts and galena. Marine shell and galena have been reported at only a very few sites in the Kankakee-LaPorte and Wisconsin regions, and apparently not at all in the Southern Indiana Region. This is by

no means a complete discussion of the contents of these sites, and it is not meant to be. One can refer to Charts 2a-d for a complete summary of them. However, the point has been made, that in terms of the three aspects of "level of organization" discussed by Sahlins and Service, the groups in the Central Illinois Region exhibit a higher level of social complexity than do the groups in the two Wisconsin regions, the Kankakee-LaPorte Region, and the Southern Indiana Region. The ability of groups in this Region to have access to both turkey-tails and copper should be explicable in terms of the changing structure of the social systems in this area.

The Saginaw Region is also out-of-the-way geographically in the flint-copper exchange system. As previously stated, the Saginaw Region appears to have been a recipient in this exchange system. The reason turkey-tails are found in this Region may be that these groups occupy an important logistic position with respect to groups to the east and to the north, and that they were exchanging items that have left no trace in Wisconsin for turkey-tails. The social complexity of groups in the archaeological record with groups in Indiana, Illinois and this Region cannot be discussed due to the paucity of the data.

Likewise, the New York and Ohio regions will not be discussed for the data are also too scant. However, attention should be drawn to the very large caches of turkey-tails in the Ohio Region. At the McKenzie Mounds, turkey-tails are indirectly associated with Adena traits. It is recognized by most archaeologists that the Adena was certainly a much more complex social system than that of any group that has been discussed in this paper. They appear to have had some sort of economic advantage which permitted them to amass extraordinarily large quantities of exotic items. Unfortunately, the nature of their economic organization is at present very poorly understood.

Summary:

This paper has given a description of both the quantitative and qualitative distribution of the turkey-tail point. It has defined turkey-tail style zones. It has demonstrated that groups in the Southern Indiana mined the Harrison County

"flint" and made most, if not all, of the varieties of turkey-tails and that these groups circulated them to other groups at considerable distances from them via the major rivers and lakes in the regions. It has also suggested that there were different patterns and intensities of interaction between various groups. Finally, a hypothesis was made to explain the differential distribution of turkey-tails.

As was previously mentioned, questions concerning the areas of manufacture of the Dickson, Spoon, Kimmel, and Fulton could not be fully answered. More specimens of these varieties must be located and studied. This is also true for turkey-tails that are parts of caches. Many more of these points must be found, recorded, and typed. The Harrison County "flint" should also be studied to determine if there are differences in the flint from the three flint localities. With the study and typing of more specimens and the correlation of these data with that already present a much clearer picture of turkey-tail circulation could be obtained.

Cache blades, the large white ceremonial knives, and other items often associated with turkey-tails should be analyzed. Only when all of these various artifacts known to have been exchanged between groups at this time period have been studied, will a complete evaluation and explanation of this immense exchange system be possible.

Since it is believed that the distribution of style types is largely correlated with areas of commonality in level of cultural complexity and in mode of adaption (Binford 1962:220), field excavation, based on turkey-tail style distribution, could be undertaken with the idea to verify this statement as well as to collect data. Excavation should be carried out especially in the Southern Indiana Region where so little work has been done as of now. Then it may be possible to make correlations between burial structures and the total structures of these groups.

The definition of turkey-tail style distribution is but a first step in a long series of investigations that must be undertaken if any questions concerning culture change and evolution are to be answered in the Western Great Lakes Region during the Late Archaic Period. Turkey-tail style distribu-

tions must be correlated with the style distributions of other artifacts of the same time period. Only then can rates of style change and the stability of style continuity in this region be noted. More excavation must be done in order to collect more data. Then the structure of artifact assemblages can be correlated with the style patterns. Only then can questions concerned with culture change and differentiation in the Western Great Lakes Region be answered.

NOTES

BIBLIOGRAPHY

Anonymous
1923 The Spetnagle Cache of Flint Spear points. Ohio Archaeological and Historical Publications. Vol. 32, pp. 639-640.

Anonymous
1951 A Red Ocher Site in Peoria County. Journal of the Illinois State Archaeological Society. n. s., I, No. 4, p. 118.

Adams, W. H.
1880 Mounds in the Spoon River Valley, Illinois Annual Report of the Board of Regents, Smithsonian Institution for the Year Ending 1879. pp. 368-370.
1885 **Ibid.** 1883. pp. 835-838.

Beaubien, Paul L.
1953 Cultural Variation within Two Woodland Mound Groups in Northeastern Iowa. American Antiquity. Vol. XIX, No. 1, pp. 56-65.

Beauchamp, William M.
1897 Aboriginal Chipped Stone Implements of New York. New York State Museum Bulletin. Vol. 4, No. 16. October, 1897. Albany. University of the State of New York.

Bell, Robert E.
1960 Guide to the Identification of Certain American Indian Projectile Points. Oklahoma Anthropological Society. Special Bulletiin No. 2, Oklahoma City.

Binford, Lewis R.
1962 Archaeology as Anthropology. American Antiquity, Vol. 28, No. 2, October, 1962, pp. 217-225.
1963a The Pomranky Site: A Late Archaic Burial Station. The University of Michigan, Museum of Anthropology, Anthropological Papers, No. 19, pp. 149-192.
1963b A Proposed Attribute List for the Description and Classification of Projectile Points. The University of Michigan, Museum of Anthropology, Anthropological Papers, No. 19, pp. 193-221.
1963c Red Ocher Caches from the Michigan Area: A Possible Case of Cultural Drift. Southwestern Journal of Anthropology, Vol. 19, No. 1, Spring, 1963, pp. 89-108.
1963d Unpublished manuscript.

Binford, Lewis R. and Mark L. Papworth
1963 The Eastport Site: Antrim County, Michigan. The University of Michigan, Museum of Anthropology, Anthropological Papers, No. 19, pp. 71-121.

Black, Glenn A.
1933 Archaeology of Greene County. Indiana History Bulletin, Vol. X, No. 5, February, 1933, pp. 189-346.
1934 Archaeological Survey of Dearborn and Ohio Counties. Indiana History Bulletin, Vol. XI, No. 7, April, 1934, pp. 173-260.

Brown, Charles E.
1905 Wisconsin Caches in: Records of the Past, Vol. IV, Part 3, pp. 82-95.
1907 Implement Caches of the Wisconsin Indians. The Wisconsin Archeologist, Vol. 6, No. 2, pp. 47-70.
1909 Additions to the Record of Wisconsin Antiquities. The Wisconsin Archeologist, Vol. 8, No. 4, pp. 113-138.
1912 Fourth Addition to the Record of Wisconsin Antiquities. The Wisconsin Archeologist, Vol. 10, No. 4, pp. 165-185.
1915 Ceremonial Knives. The Wisconsin Archeologist. Vol. 13, No. 4, pp. 176-181.
1916 Archaeological History of Milwaukee County. The Wisconsin Archeologist, Vol. 15, No. 4, pp. 24-105.
1923 Waukesha County—Northern Townships. The Wisconsin Archeologist. n. s. Vol. 2, No. 1, pp. 8-59.
1923 Waukesha County—Southern Townships. The Wisconsin Archeologist. n. s. Vol. 2, No. 2, pp. 69-119.
1924 Indian Gravel Pit Burials in Wisconsin. The Wisconsin Archeologist. n. s. Vol. 3, No. 3, pp. 65-82.
1925 Fifth Addition to the Record of Wisconsin. Antiquities —Part 2. The Wisconsin Archeologist. n. s. Vol. 4, No. 2, pp. 85-144.
1930 Turkey-tail points. The Wisconsin Archeologist. n. s. Vol. 9, No. 2, pp. 99-103.
1940 Red Paint with Wisconsin Burials. The Wisconsin Archeologist. n. s. Vol. 21, No. 4, pp. 74-76.
1940 Tichigan Cache. The Wisconsin Archeologist. n. s. Vol. 21, No. 4, pp. 69-71.

Brown, Charles E. and A. O. Barton
1916 Grant County Indian Remains. The Wisconsin Archeologist. Vol. 15, No. 4, pp. 177-193.

Buis, A. R.
1944 The Prehistoric Villages and Camp Sites of the Peoria Lake Area. Journal of the Illinois State Archaeological Society. January Ed., pp. 9-15.

Central States Archaeological Journal
1954 Vol. 1, No. 1, n. s. Fig. 72.
1957 Vol. 3, No. 4, n. s. Fig. 83, pp. 148, April.
1958 Vol. 5, No. 1, n. s. Fig. 36, p. 72, July.
1961 Vol. 8, No. 1, n. s. Fig. 3, p. 7, January.
1962 Vol. 9, No. 1, n. s. Fig. 19, p. 30, January.

Cole, Fay-Cooper and Thorne Deuel
1937 Rediscovering Illinois. Chicago: University of Chicago Press.

Cole, H. E.
1922 Summary of the Archeology of Western Sauk County. The Wisconsin Archeologist. n. s. Vol. 1, No. 3, pp. 81-113.

Crane, H. R. and James B. Griffin
1958 University of Michigan Radiocarbon Dates II. Science, Vol. 127, No. 3306, pp. 1098-1105.
1959 University of Michigan Radiocarbon Dates IV. American Journal of Science, Radiocarbon Supplement, Vol. I, pp. 173-198.
1960 University of Michigan Radiocarbon Dates V. American Journal of Science, Radiocarbon Supplement, Vol. II, pp. 31-48.

Dragoo, Don W.
1951 Archaeological Survey of Shelby County, Indiana. The Indiana Historical Bureau, Indianapolis.

Dustin, Fred
1941 Caches of Prehistoric Artifacts Discovered in Saginaw County, Michigan. Papers of the Michigan Academy of Science, Arts and Letters, XXVII, pp. 505-510.

Falge, Louis
1915 Indian Remains in Manitowoc County. The Wisconsin Archeologist. o. s. Vol. XIV, No. 4, December, 1915, pp. 121-164.

Faulkner, Charles H.
1960a A Possible Early Woodland Cache Discovery in Northern Indiana. Proceedings of the Indiana Academy of Science for 1959. Vol. 69, 92-98.
1960b The Red Ochre Culture: An Early Burial Complex in Northern Indiana. The Wisconsin Archeologist. n. s. Vol. 41, No. 2 (June, 1960), pp. 35-48.
1962 The Significance of some Red Ochre-like Artifacts from Lake County, Indiana. The Wisconsin Archeologist n. s. Vol. 43, No. 1 (March, 1962), pp. 1-8.
1963 Personal communication.

Fogel, Ira L.
1963 The Dispersal of Copper Artifacts in the Late Archaic Period of Prehistoric North America. The Wisconsin Archeologist. n. s. Vol. 44, No. 3, September, 1963, pp. 129-179.

Fowke, Gerald
1849 Material for Aboriginal Stone Implements. The Archaeologist, Vol. II, Waterloo, Ind., pp. 328-335.
1928 Archaeological Investigations—II, 44th Annual Report, Bureau of American Ethnology, 1926-27, Washington, D. C., 1928. pp. 401-455.

Fox, George R.
1916 Outagamie County Antiquities. The Wisconsin Archeologist, Vol. 15, No. 1, pp. 1-21.

Fox, George R. and E. C. Tagatz
1916 Indian Remains in Waushara County. The Wisconsin Archeologist, Vol. 15, No. 3, pp. 113-171.

Gerend, Alphonse
1920 Sheboygan County. The Wisconsin Archeologist. Vol. 19, No. 3, pp. 121-192.

Greenman, Emerson F.
1953 Review of Sixty Years of Ontario Archaeology, by K. E. Kidd, and the Archaeology of the Upper Great Lakes Area, by George I. Quimby, in: Archaeology of Eastern United States. American Antiquity, Vol. 19, pp. 176-177.

Griffin, James B. and Richard Morgan (Eds.)
1941 Contributions to the Archeology of the Illinois River Valley. Transactions of the American Philosophical Society, n. s. Part I, Vol. 32.

Grimm, R. E. (Ed.)
1953 Prehistoric Art. St. Louis, Missouri. Greater St. Louis Archaeological Society.

Hills, Leslie W.
1898 Correspondence section. The American Archaeologist, Vol. 2, Part 3, p. 77.

Jelinek, Arthur J.
1962 An Index of Radiocarbon Dates Associated with Cultural Materials. Current Anthrpology. Vol. III, No. 5, December, pp. 451-477.

Journal of the Illinois Archaeological Society
1949 p. 17, Vol. 7, No. 2, October.
1950 p. 64, Vol. 1, No. 2.
1951 p. 28, Vol. 2, No. 1, Fig. 20.

Libby, Willard F.
1952 Radiocarbon Dating. Chicago.

McAllister, J. Gilbert
1932 Archaeology of Porter County. Indiana History Bulletin. Vol. 10, No. 1, October, pp. 7-96.

Mills, William C.
1917 The Feurt Mound and Village Site. Ohio Archaeological and Historical Publication. Vol. XXVI, No. 3, pp. 305-449.

Moorehead, Warren K.
c. 1900 Prehistoric Implements, A Reference Book. Cincinnati: Robert Clarke Co.
1900 Report of Field Work in Various Portions of Ohio. Ohio Archaeological and Historical Publications. Vol. VII, pp. 110-203.

Morgan, Richard G. and James H. Rodabaugh (Eds.)
1947 Bibliography of Ohio Archaeology. Columbus: Ohio State Archaeological and Historical Society.

Morse, Dan
1951 You Can Still Find More of Them. Journal of the Illinois Archaeological Society, Vol. 1, No. 3, pp. 85-89.
1963 Personal Communication.

Morse, Dan F.
1959 Preliminary Report on a Red Ocher Mound at the Morse Site, Fulton County, Illinois. Papers of the Michigan Academy of Science, Arts and Letters, Vol. XLIV, pp. 193-207.

Niehoff, Arthur
1959 Beads from a Red Ocher burial in Ozaukee County. The Wisconsin Archeologist. n. s. Vol. 40, No. 1, pp. 25-28.

Ohio Archaeological and Historical Publication
1900 Vol. VIII, p. 344.

Overton, George
1931 Old Beach Camp Sites in Winnebago County. The Wisconsin Archeologist. n. s. Vol. 10, No. 2, pp. 54-60.

Papworth, Mark L.
1958 Artifacts from the Kimmel Site, Berrien Springs, Michigan. Michigan Archaeologist, Vol. 4, No. 3, September, pp. 51-56.

Perino, Gregory
1944 Cache. Journal of the Illinois Archaeological Society, No number, p. 19.
1954 The Titterington Focus—Red Ochre. Central States Archaeological Journal. n. s. Vol. 1, No. 1, January, pp. 15-17.
1963 Personal communications on behalf of Gilcrease Fdn.

Quimby, George I.
1957 An Old Copper Site? at Port Washington. The Wisconsin Archeologist. n. s. Vol. XXXVIII, No. 1, March, pp. 1-5.
1960 Burial Yields Clues to Red Ocher Culture. Chicago Natural History Museum Bulletin, XXXI, No. 2, February, p. 5.
1963 Personal communications on behalf of Chicago Natural History Museum.

Ritchie, William A.
1944 The Pre-Iroquoian Occupations of New York State. Rochester Museum of Arts and Sciences. Memoir No. 1, Rochester, New York.
1963 Personal communications on behalf of New York State Museum.

Ritzenthaler, Robert E., and Arthur Niehoff
1958 A Red Ocher Burial in Ozaukee County. The Wisconsin Archeologist. n. s. Vol. XXXIX, No. 2, June, pp. 115-120.
1963 Personal Communication on behalf of Milwaukee Public Museum.

Ritzenthaler, Robert E., and George I. Quimby
1962 The Red Ocher Culture of the Upper Great Lakes and Adjacent Areas. Fieldiana: Anthropology, XXXVI, No. 11, March, pp. 243-375.

Sahlins, Marshall D. and Elman R. Service (Eds.)
c. 1960 Evolution and Culture. University of Michigan Press. Ann Arbor.

Schupp, Philip C.
1944 The Schupp Collection—One of the Outstanding Exhibits in the Entire Central West. Journal of the Illinois Archaeological Society, January ed., pp. 28-34.

Schumacher, J. P.
1918 Indian remains in Door County. The Wisconsin Archeologist, Vol. 16, No. 4, pp. 125-145.

Smith, Harlan I.
1889 Nests of Flint Implements in Michigan. American Antiquarian. Vol. XI, pp. 249-250.
1894 Caches of the Saginaw Valley, Michigan. Proceedings of the American Association for the Advancement of Science for 1893. Salem: Published by the Permanent Secretary, pp. 300-303.
1901 The Saginaw Valley Collection. American Museum of Natural History, Supplement to American Museum Journal, Vol. 1, No. 12, pp. 1-24.

Snyder, J. F.
1883 Buried Flints in Cass County, Illinois. Annual Report of the Board of Regents, Smithsonian Institution for the Year 1881, pp. 563-568.

Stout, A. B.
1906 Summary of the Archaeology of Eastern Sauk County. The Wisconsin Archeologist, Vol. 5, No. 2, pp. 230-288.

Stroebel, Ralph
1937 A Cache of Chert Blades in Saginaw County. Michigan. American Antiquity, Vol. III, No. 2, pp. 186-187.

Taggert, David W.
1963 Dimondale Cache from Eaton County, Michigan. Unpublished manuscript, Museum of Anthropology, University of Michigan.

Titterington, Paul F.
1950 Some Non-Pottery Sites in the St. Louis Area. Journal of the Illinois Archaeological Society, n. s. Vol. 1, No. 1, January, pp. 19-31.

Townsend, Earl C.
1959 Birdstones of the North American Indian. Indianapolis, Indiana, Privately printed.

Wilson, Thomas
1899 Arrowpoints, Spearheads and Knives of Prehistoric Times. Report of the U. S. National Museum, 1897, Washington: Government Printing Office, pp. 823-981.

Wray, Donald E.
1937 A Red Ochre Mound in Fulton County. Transactions of the Illinois Academy of Science, XXX, Pt. 2, p. 82.

the Kimmel in the Lake Winnebago Region. As was stated before, the area of manufacture of the Kimmel is unknown. Perhaps it was manufactured in the Lake Winnebago Region. An interesting phenomenon is suggested by the presence of the two Dickson turkey-tails, found in Wisconsin, but in areas outside of the Southeastern Wisconsin or Lake Winnebago Regions. One of these specimens is from Richland County (W-24d), and is made of local quartzite (Brown 1907:62). The other is made of white chert, its exact provenience unknown (Logan Museum, No. 210). No specimens of this variety have been reported in Wisconsin made of Harrison County "flint". It seems that actual specimens of this variety were not circulated into what is now Wisconsin. However, the Dickson style concept was known, and apparently locally interpreted.

The Central Illinois Region and the St. Charles Region are difficult to discuss for so few of the turkey-tails reported in publications could be typed. Therefore, it is hard to say if the sample available is representative. While it cannot be determined if the Hebron and Mitchell turkey-tails were brought into they Region via groups in the Kankakee-LaPorte or the Southern Indiana regions, this particular interaction did not bring these varieties into the Region. From the distribution and the limited number of specimens of Spoon and Dickson, the only statement that can be made concerning them is that possibly these varieties were made by groups in the Region. The distribution of the Fulton variety might suggest that it was being manufactured in both the Central Illinois and Southern Indiana regions. This variety was widely circulated, and is found everywhere where turkey-tails have been reported with the exception of the Southeastern Wisconsin Region. The absence of this variety in the Wisconsin Region may be the fault of incomplete data, or it may be that groups in the Wisconsin Region did not participate in an exchange of turkey-tails that involved the circulation of varieties found in the Central Illinois Region (i. e., Dickson, Spoon and Fulton).

The Central Illinois Region is distinctive from all other regions in the sense that groups in the Region do not seem to have participated to any great extent in the exchange of tur-

key-tails that were manufactured in the Southern Indiana Region, unless it could be determined that the Spoon, Dickson and Fulton were made in the Southern Indiana Region. These groups may have participated in this turkey-tail logistics network in the sense that they got hornstone; made their own distinctive turkey-tail varieties; circulated the Spoon and Dickson only in very limited numbers; circulated the Fulton widely; and received very few "outside" varieties.

The Saginaw Region apparently is a recipient region in the turkey-tail logistics network. There is no evidence that turkey-tails were manufactured here, yet the Hebron, Mitchell, Fulton, and Dickson were circulated to groups in the Region via groups in the Kankakee-LaPorte Region.

Only nine turkey-tails have been reported in the New York Region. They are all single surface finds. This material is so scanty that not much can be said except to note that turkey-tails have been found here.

Turkey-tail logistics routes:

Turkey-tails must have been circulated along all of the major waterways over the area where they are found. From the Southern Indiana Region, they were probably circulated up the Wabash River into the Kankakee Region. From this Region, they were moved along the Kankakee and the Fox Rivers, and Lake Michigan into Wisconsin. From the Kankakee-LePorte Region, they were also circulated along the eastern shore of Lake Michigan, and diagonally across Michigan into the Saginaw Region. In the "southern area", turkey-tails were dispersed along the Ohio and Mississippi rivers, and along the Illinois river. They could have been transported via Lakes Huron, Erie, and Ontario into the New York Finger Lakes Region; or they could have been circulated along the Ohio, Allegheny and Genesee rivers into the Region.

Differential distribution of turkey-tail styles:

Not only were turkey-tails being circulated and exchanged over vast areas, but they were being exchanged in different patterns of between-group interaction. In looking at Maps IIa-d, it is apparent that there are different configurations of style distribution — some varieties have a very restricted dis-

Young, Philip D.
1961 Two Early Burial Sites in Lake County. In: Chicago Area Archaeology. Illinois Archaeological Survey, Inc. Bulletin No. 3, pp. 20-28.

NOTES

KEY TO SITE INDEXES:

Conditions or recovery:

S =single surface find
B =burial find
C =cache find
M=mound find
* =turkey-tails plus associated goods
**=placing of item in this category is questionable
tt =turkey-tail
ttb=Turkey-tail blank
X =present, but number unknown

Turkey-tail type designation:

FV =Fulton variety
SV =Spoon variety
DV =Dickson variety
JV =Jackson variety
KV =Knox variety
KiV =Kimmel variety
RV =Ross variety
Stv =Stemmed variety
MV =Mitchell variety
MaV=Marshall variety
?VB=unknown variety of turkey-tail blank

Reference:

O.A.H.P. =Ohio Archaeological & Historical Publication
C.S.A.J. =Central States Archaeological Journal
I.S.A.S.J. =Illinois State Archaeological Society Journal
I. S. M. =Illinois State Museum
M. P. M. =Milwaukee Public Museum
C.N.H.M. =Chicago Natural History Museum
N.Y.S.M. =New York State Museum

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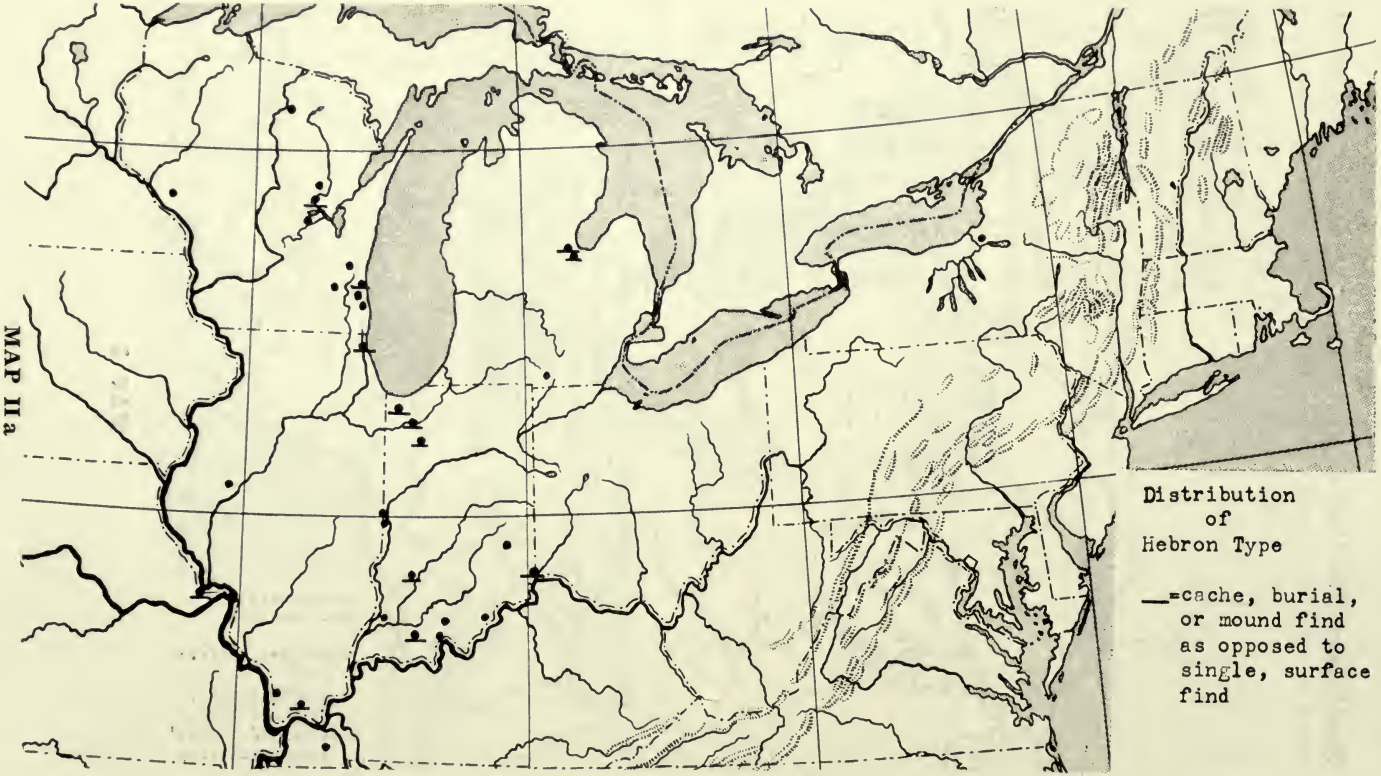
I. S. M. =Illinois State Museum
M. P. M. =Milwaukee Public Museum
C.N.H.M. =Chicago Natural History Museum
N.Y.S.M. =New York State Museum

Scale of Miles
0 100 200 300
Turkey-tail
Distribution
!-single, surface
find
●-cache, burial,
or mound find
—areas of "flint"
mining activity

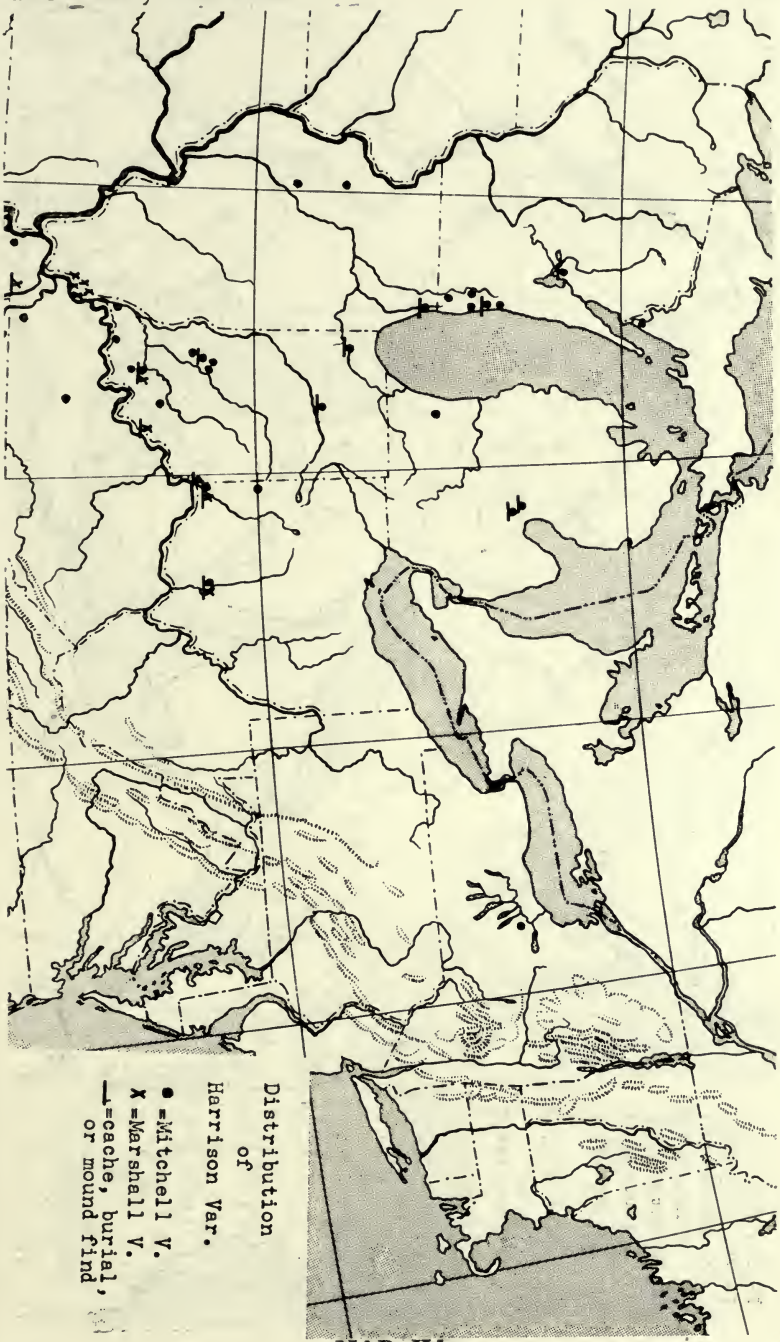
MAP I

MAP IIa

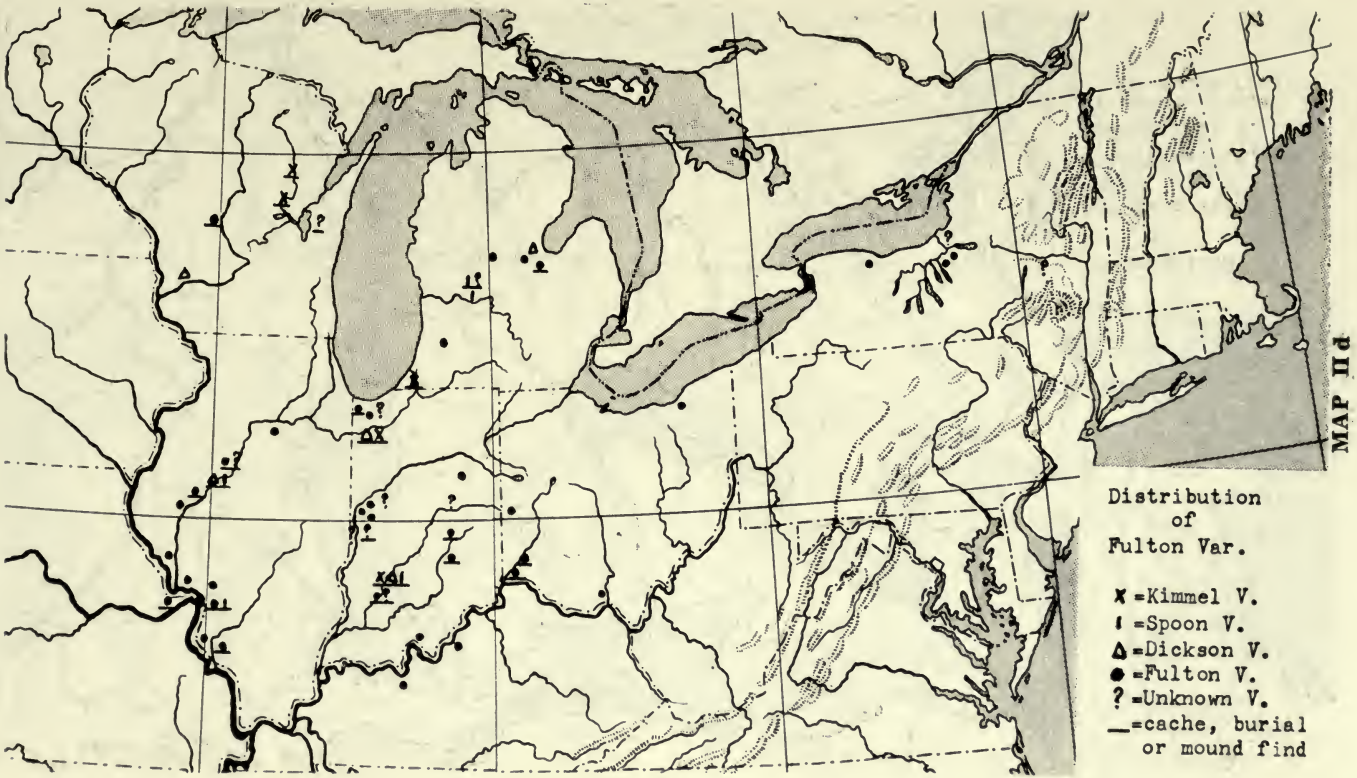


Distribution
of
Hebron Type

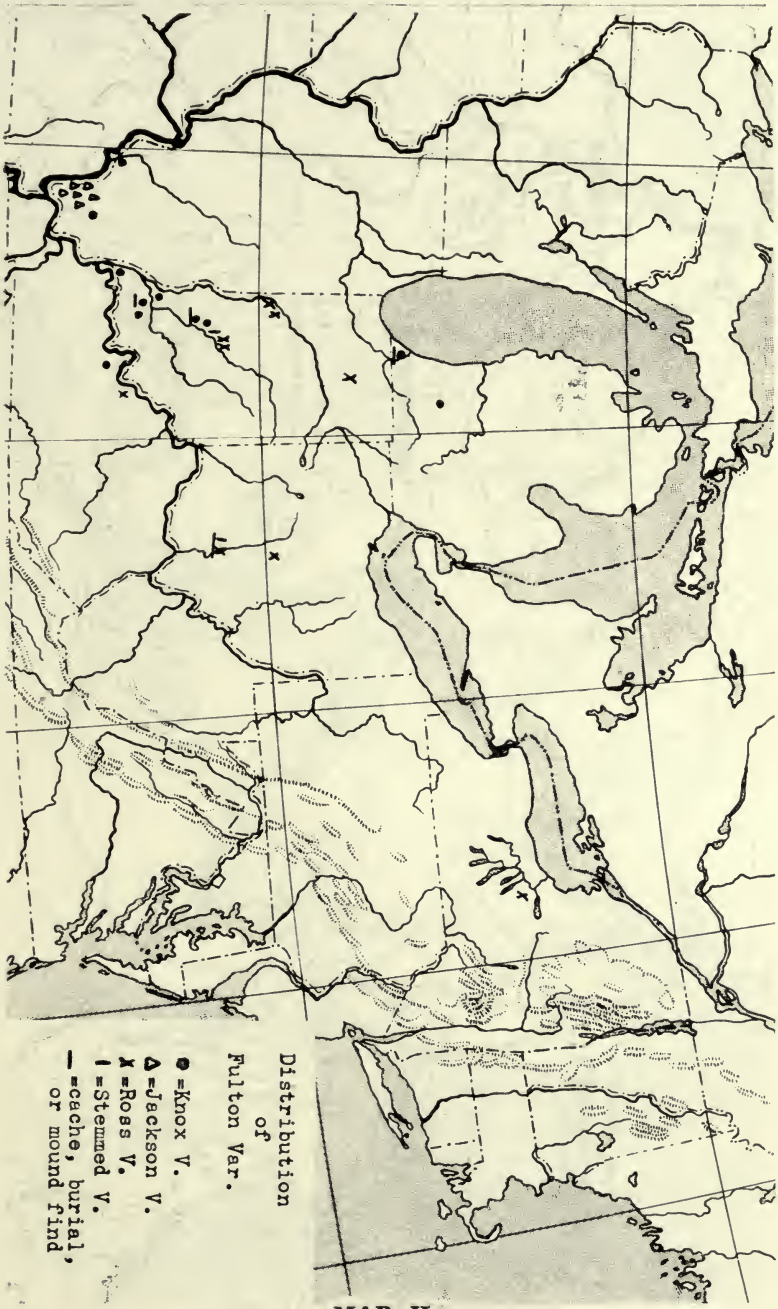
—=cache, burial, or mound find as opposed to single, surface find


Distribution
of
Harrison Var.
● =Mitchell V.
X =Marshall V.
⊥=cache, burial,
or mound find

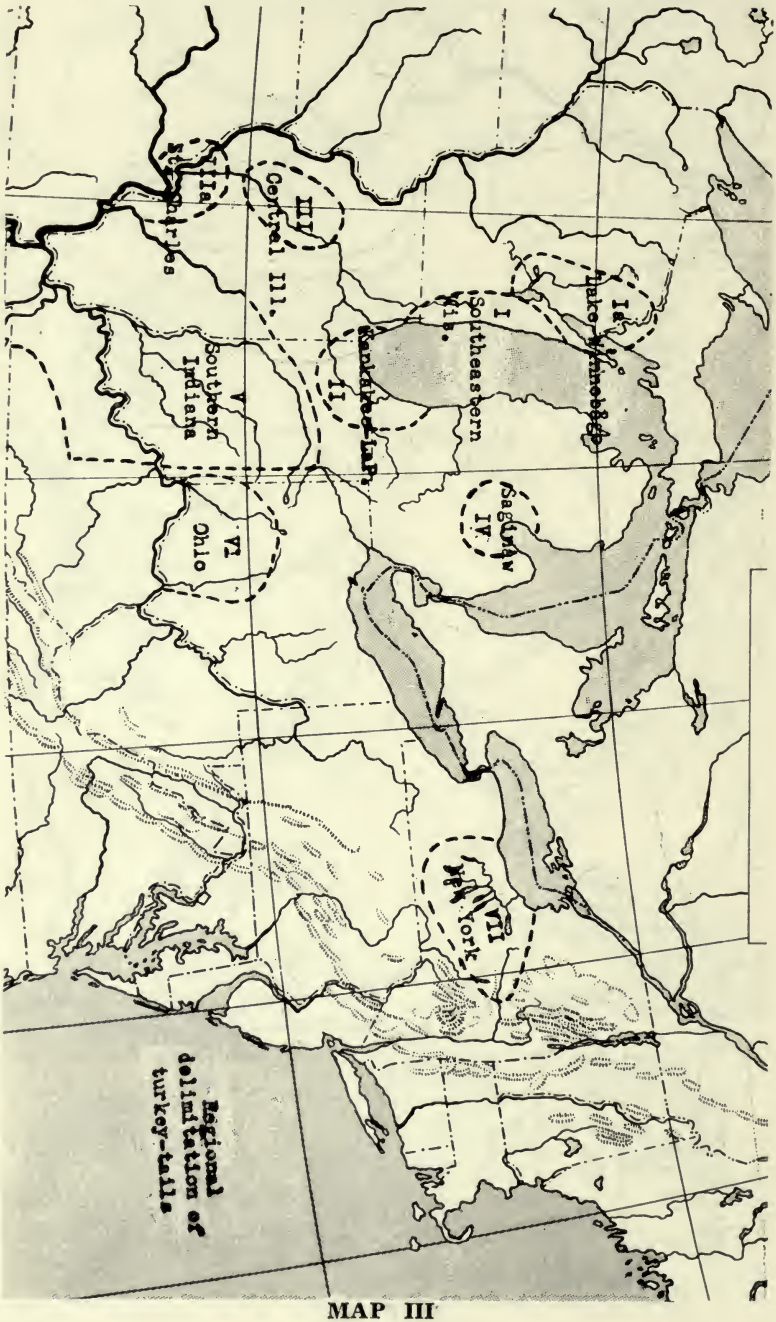
MAP II b


Distribution
of
Fulton Var.
X =Kimmel V.
I =Spoon V.
Δ =Dickson V.
● =Fulton V.
? =Unknown V.
__=cache, burial
or mound find

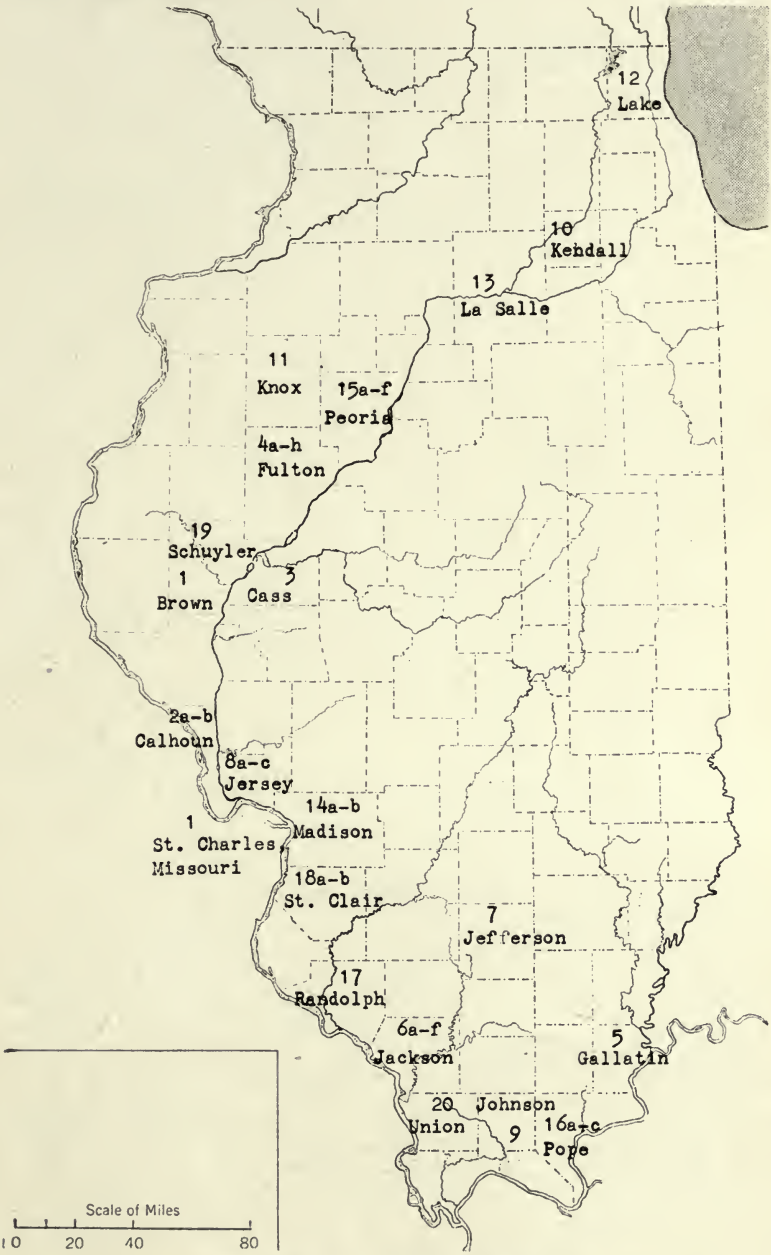
MAP II d


Distribution
of
Fulton Var.
●=Knox V.
Δ=Jackson V.
x=Ross V.
I=Stemmed V.
—=cache, burial,
or mound find

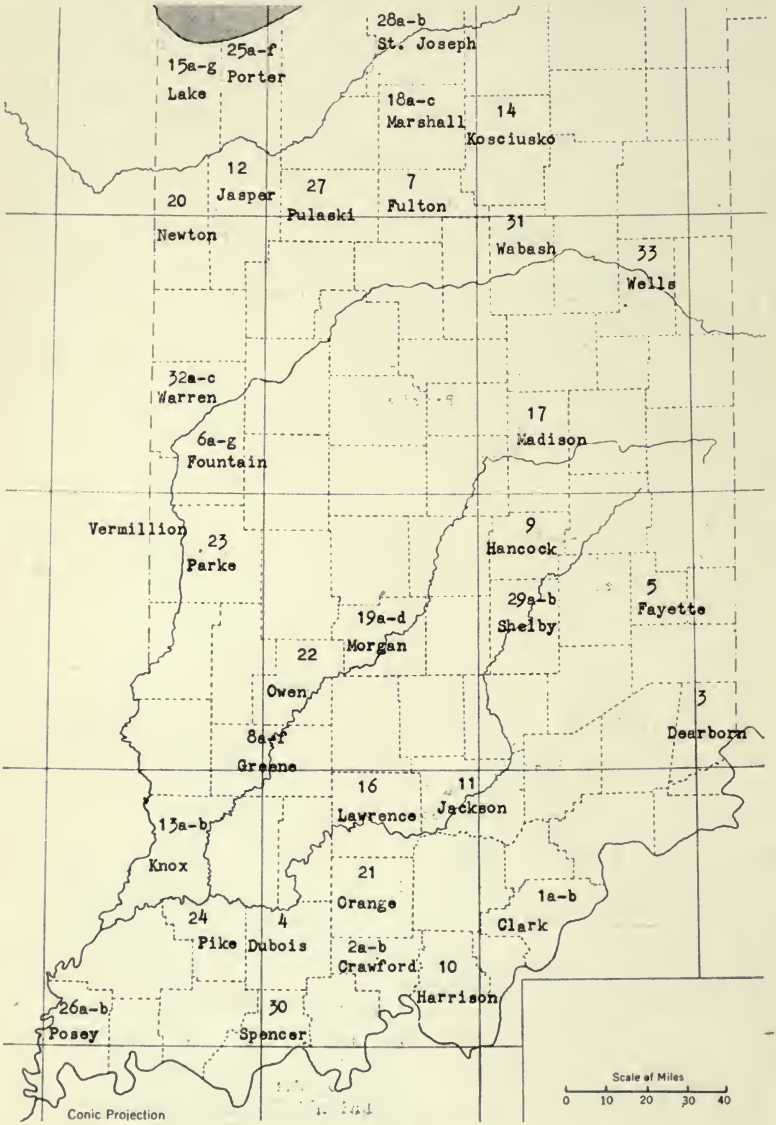
MAP IIc


Ia
Lake Winnebago
I
Southeastern
Wis.
Kankakee-LaP.
II
III
Central Ill.
IIIa
St. Charles
V
Southern
Indiana
VI
Ohio
Saginaw
IV
VII
New York
Regional
delimitation of
turkey-tails

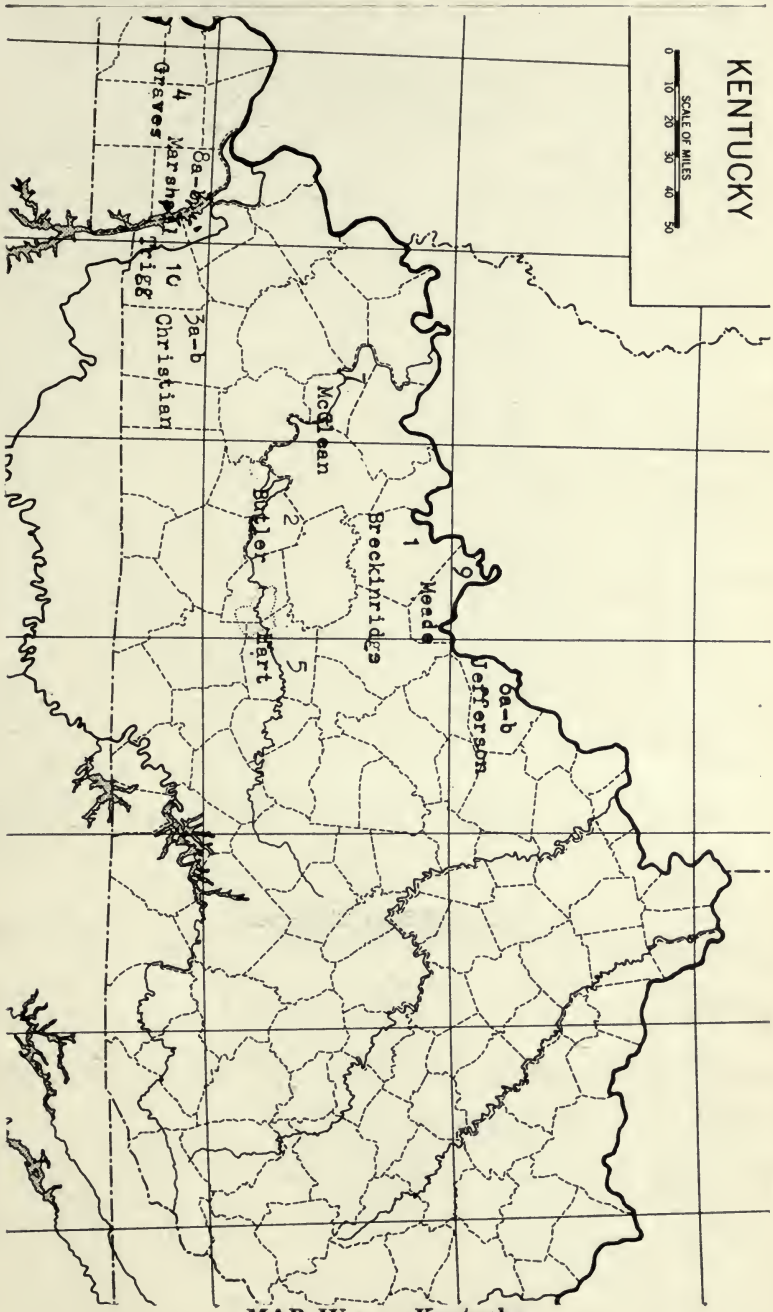
MAP III



MAP IV a — Illinois-Missouri
(Arbitrary numbers were assigned to each site)

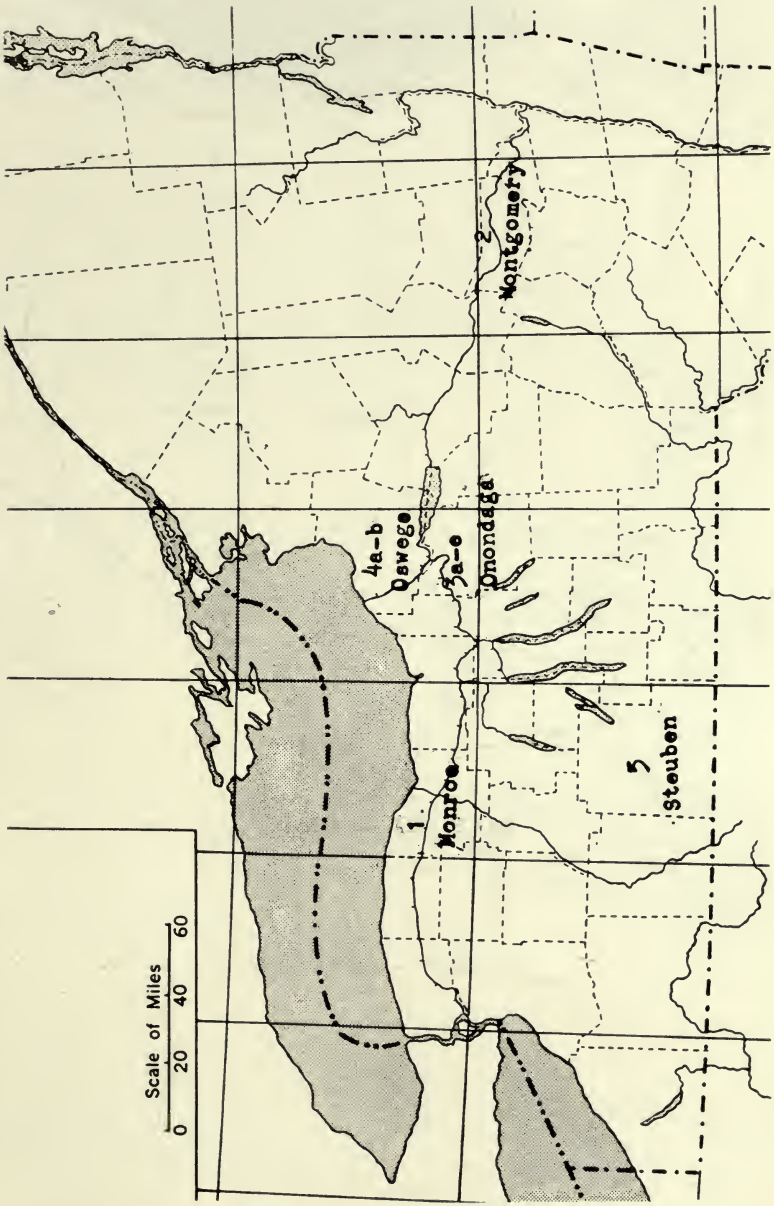


MAP IV b — Indiana



MAP IV c — Kentucky

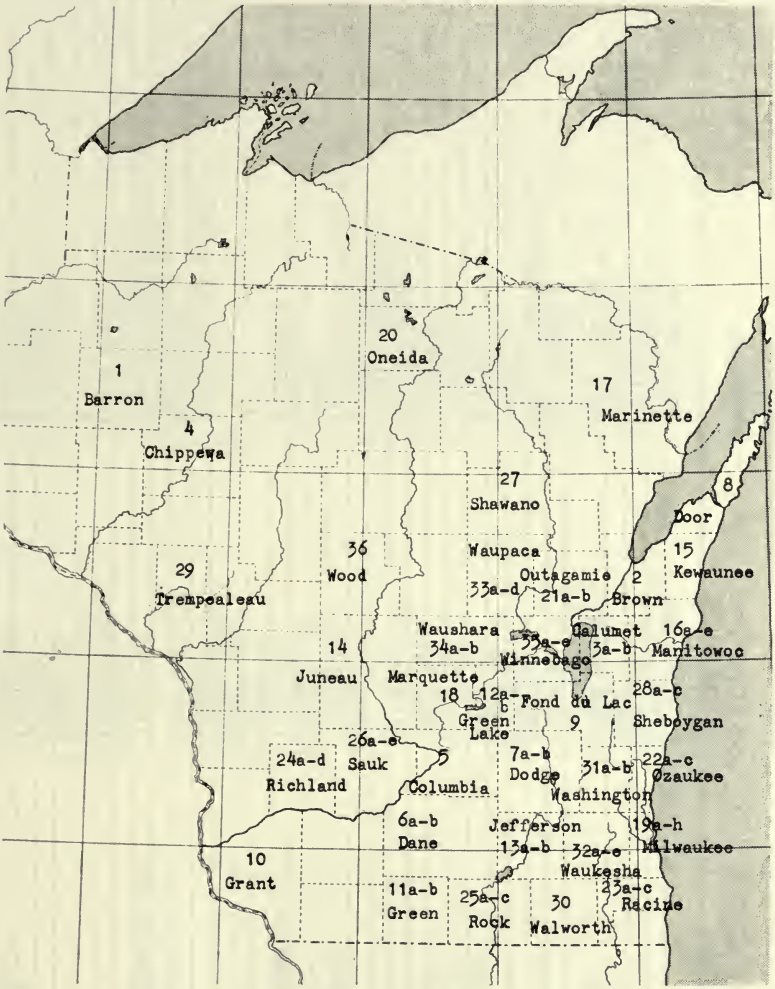
MAP IV d — Michigan



Map IVe — New York

2
Cuyahoga
3
Darke
6
Miami
5
Licking
10a-b
Warren
8a-b
Ross
4
Hamilton
7
Pike
1
Brown
9
Scioto

MAP IV f — Ohio



MAP IV g — Wisconsin

SITE INDEX FOR THE STATE OF INDIANA

County	Site No.	Site Name	Tt type Designation	Reference
Clark	In-1a		6 Harrison-MaV	ISASJ, 1950, 64
Clark	In-1b		Hebron	B.W. Stephens C.
Crawford	In-2a		Hebron	I.S. Dougherty C.
Crawford	In-2b		Hebron	I.S. Dougherty C.
Dearborn	In-3	S30	X Harrison-MV X Hebron	Black, 1934, 202, Pl. 32
Dubois	In-4		Fulton-KV	I.S. Dougherty C.
Fayette	In-5		Hebron	MP.M., 49472 - No. 7
Fountain	In-6a		Fulton-FV	H. Franz C.
Fountain	In-6b		Fulton-FV	H. Franz C.
Fountain	In-6c		Fulton-RV	H. Franz C.
Fountain	In-6d		Fulton-RV	H. Franz C.
Fountain	In6e		Fulton-FV	H. Franz C.
Fountain	In-6f		Fulton-?VB	H. Franz C.
Fountain	In-6g		22 Fulton- ?VB	G.S. Roachdale C.
Fulton	In-7			Faulkner, 1960b, 45-46
Greene	In-8a		1 Hebron	J.W. West C.
Greene	In-8b	Hasler	2 Fulton-KiV 1 Fulton - SV 1 Fulton - DV	Townsend, 1959, 192-195, Pl. 60 Cache 5 Cache 5
Greene	In-8c	Blackmore	1 Fulton-FV 1 Fulton-KV 1 Harrison-MV 1 Fulton -?VB	C.H. Tomak C.
Greene	In-8d		Fulton-KV	Black, 1933, 346, Pl. 36
Greene	In-8e		1 Harrison - ?VB	G. Perino C.
Greene	In-8f			Black, 1933, 346, Pl. 36
Hancock	In-9	Brandywine Crk.	2 Fulton-FV	Townsend, 1959, 190-192, Pl. 59
Harrison	In-10		Fulton-FV	G. Goldman C.
Jackson	In-11		1 Harrison-MV	CNHM, #51449
Jasper	In-12			R. Nesius C.
Knox	In-13a		Hebron	B.W. Thompson C.
Knox	In-13b		Fulton-KV	B.W. Thompson C.
Kosciusko	In-14		Fulton-RV	M.E. Hawes C.
Lake	In-15a	Dyer	1 Fulton-FV 2 Hebron	Quimby, 1960, 5 CNHM, #268006-268008 Ritzenthaler & Quimby, 1962, Fig. 116
Lake	In-15b	Kankakee R.	6 Fulton DV 1 Fulton- KiV	Faulkner, 1962, 3-4 A. Johnson C.

Lake	In-15c	Oak Grove	X Hebron 1 Harrison-MV	Faulkner, 1962, 4 A. Johnson C.
Lake	In-15d		Fulton-FV	G. Perino C.
Lake	In-15e	La41		W.A. Faulkner C.
Lake	In-15f	La28		W.A. Faulkner C.
Lake	In-15g			W.A. Faulkner C.
Lawrence	In-16		X Harrison-MV X Harrison-MaV X Hebron	I.S. Dougherty C.
Madison	In-17		Fulton - ?V	CSAJ, 1957, 148, Fig. 83
Marshall	In-18a	Mr215		Faulkner, 1960a, 93-94
Marshall	In-18b	Mr5		Faulkner, 1960b, 39
Marshall	In-18c			Faulkner, 1960b, 39
Morgan	In-19a		Fulton-RV	G. Perino C.
Morgan	In-19b		Fulton-RV	G. Perino C.
Morgan	In-19c		Harrison - MV	G. Perino C.
Morgan	In-19d		Harrison - MV	G. Perino C.
Newton	In-20	N-101		W.A. Faulkner C.
Orange	In-21		Harrison-MV	I.S. Dougherty C.
Owen	In-22		Fulton-StV	M. Meek C.
Parke	In-23			G.S. IRWIN C.
Pike	In-24		40 Fulton- KV	L.R. Binford Comm.
Porter	In-25a		Fulton - ?V	McAllister, 1932, Pl. 38
Porter	In-25b			McAllister, 1932, Pl. 43
Porter	In-25c			McAllister, 1932, Pl.43
Porter	In-25d	PO-52		W. A. Faulkner C.
Porter	In-25e	PO-58		W. A. Faulkner C.
Porter	In-25f	Klemms		W.A. Faulkner C.
Posey	In-26a		Harrison-MV	I.S. Dougherty C.
Posey	In-26b		Fulton-FV	G. Perino C.
Pulaski	In-27	Peterson	7 Hebron	Faulkner, 1960b, 42-43, Fig. 2
St. Joseph	In-28a			CNHM, #205239
St. Joseph	In-28b			CNHM, #205316
Shelby	In-29a		5 Fulton-FV	Grimm, 1953, 119
Shelby	In-29b	Sh-73		Dragoo, 1951, 29
Spencer	In-30		Harrison-MV	M. Meek C.
Wabash	In-31		Harrison-?VB	G. Perino C.
Warren & Vermillion	In32a		Hebron	G.S. Irwin C.
Warren & Vermillion	In 32b		Hebron	G.S. Irwin C.
Warren & Vermillion	In-32c		Fulton-?V	G.S.Irwin C.
Wells	In-33		Fulton-FV	G.Perino C.

SITE INDEX FOR THE STATE OF ILLINOIS

County	Site No.	Site Name	Tt Type Designation	Reference
Brown	I-1		Fulton-Fv	G. Perino C.
Calhoun	I-2a			B. W. Stephens C.
Calhoun	I-2b		Fulton-FV	H.W. Franke C.
Cass	I-3			Snyder, 1883, 564-565
Fulton	I-4a	Banner		Wray, 1937, 82
Fulton	I-4b	F° 189	4 Fulton-SV 1 Fulton-DV	D. Dickson C.
Fulton	I-4c		1 Fulton-FV	L. G. Merritt C.
Fulton	I-4d	Crable	Hebron	D. Morse, 1951, 86, Fig. 1
Fulton	I-4e	Morton F°13	Harrison-MV	ISM #a58
Fulton	I-4f	Morton F°11		Cole & Deuel, 1937,65,69; Bk. #1 **
Fulton	I-4g	Morton F°14		Cole & Deuel, 1937, 87,89-90
Fulton	I-4h1	Morse-B. 1		D. Morse, 1959, 198
Fulton	I-4h2	Morse-B.2		D. Morse, 1959, 198
Fulton	I-4h3	Morse-B.3		D. Morse, 1959, 198
Fulton	I-4h4	Morse - B. 7		D. Morse, 1959, 199
Gallatin	I-5		2 Harrison-MaV	CSAJ, 1962, 30, Fig. 19
Jackson *	I-6a		Fulton-JV	P. Florio C.
Jackson *	I-6b		Fulton-JV	P. Florio C.
Jackson *	I-6c		Fulton - JV	P. Florio C.
Jackson *	I-6d		Fulton - JV	P. Florio C.
Jackson *	I-6e		Fulton- JV	P. Florio C.
Jackson *	I-6f		Fulton - JV	P. Florio C.

Jefferson	I-7		Fulton - KVB	CSAJ, 1961, 7, Fig. 3
Jersey	I-8a		Fulton - FV	G. Perino C.
Jersey	I-8b			G. Perino C.
Jersey	I-8c			G. Perino C.
Johnson	I-9		2 Hebron	R.E. Hine C.
Kendall	I-10			B.W. Stephens C.
Knox	I-11		Harrison-MV	C. J. Maginel C.
Lake	I-12	Beake	X Hebron X Harrison-MV	Young, 1961, 21-22 H.J. Rodemaker
LaSalle	I-13		Fulton-FV	ISM #20039, 20004
Madison	I-14a		Fulton-FV	G. Perino C.
Madison	I-14b		1 Fulton-FV 4 Fulton-SV	Perino, 1944, 19
Peoria	I-15a			Anonymous, 1951, 118
Peoria	I-15b	Rench		Buis, 1944, 10
Peoria	I-15c	Sam Parker		Adams, 1880, 369
Peoria	I-15d	Henry Jacques Md I		Adams, 1885, 836
Peoria	I-15e	Henry Jacques Md II		Adams, 1885, 836-837
Peoria	I-15f	Morgan	2 Fulton-FV 2 Fulton -?VB	R. Morgan C. CSAJ, 1958, 72, Fig. 36
Pope	I-16a		Harrison-MaV	B.W. Stephens C. ISASJ, 1951, 28, Fig. 20
Pope	I-16b		Harrison-MaV	G. Perino C.
Pope I	I-16c		Harrison-MaV	G. Perino C.
Randolph	I-17		Fulton-KVB	CSAJ, 1961, 7, Fig. 3
St. Clair	I-18a		Fulton-FV	Grimm, 1953, 49
St. Clair	I-18b		Fulton-FV	G. Perino C.
Schuyler	I-19	Rose Md-B.4		Griffin & Morgan, 1941, 26, Pl. 29
Union	I-20		Hebron	I.S. Dougherty C.

* equals Jackson and surrounding counties.

SITE INDEX FOR THE STATE OF MICHIGAN

County	Site No.	Site Name	Tt Type Designation	Reference
Allegon	M-1		Fulton-FV	P. Armintrout C.
Alpena	M-2	Huron Beach		Binford, 1963c, 96-98
Antrim	M-3	Eastport		Binford & Papworth, 1963, 71-123
Berrien	M-4a	Kimmel	2 Fulton-KiV 1 Fulton-KV	Papworth, 1958, 51-56 U. of Michigan M., # 40292
Berrien	M-4b	Moccasin Bluff		Hills, 1898, 77
Berrien	M-4c	Conrad		A.R. Green C.
Berrien	M-4d	Riverview Cemetery		A.R. Green C.
Berrien	M-4e	Ueck		A.R. Green C.
Eaton	M-5a			Brown, 1907, 62
Eaton	M-5b	Dimondale		Taggert, 1963, 1
Hillsdale	M-6		Hebron	U. of Michigan M., #39859
Ionia	M-7		Fulton-KV	U. of Michigan, #1244 Lot No.
Isabella	M-8		Fulton-FV	U. of Michigan, #27647
Kent	M-9		Harrison-MV	M.E. Hawes C.
Midland	M-10	Pomranky	1 Harrison-MV X Hebron	Binford, 1963a, 155, 176-180, Fig. 6
Montcalm	M-11a		1 Fulton-SV 3 Fulton-?VB	U. of Michigan, M., #L-3771
Montcalm	M-11b		Fulton-SV	U. of Michigan, M., #2276ML Lot No.
Saginaw	M-12a	Frazer #1	1 Fulton-FV 1 Hebron	Smith, 1901, 22-24 Wilson, 1899, 980
Saginaw	M-12b	Frazer #2		Smith, 1901, 22-24 Wilson, 1899, 980
Saginaw	M-12c	Frazer	Fulton-FV	U. of Michigan, M., #39902
Saginaw	M-12d	Armstrong		Dustin, 1942, 506
Saginaw	M-12e	Kinney		Dustin, 1942, 505
Saginaw	M-12f	Bornhoff		Dustin, 1942, 506
Saginaw	M-12g	Watson #1		Stroebel, 1937, 186-187
Saginaw	M-12h	Watson #2		Dustin, 1942, 506
Saginaw	M-12i	Watson #3		Dustin, 1942, 506
Saginaw	M-12j	Merrill		Smith, 1894, 302
Saginaw	M-12k	Willie		Smith, 1901, 16
Saginaw	M-12l	Kempton		Dustin, 1942, 508
Saginaw	M-12m	Mershon		Dustin, 1942, 509
Saginaw	M-12n	Golson #1		Smith, 1894, 301
Saginaw	M-12o	Golson #2		Smith, 1894, 301
Saginaw	M-12p	Stroebel		Dustin, 1942, 507-508
Saginaw	M-12q	Stroebel	Fulton-DV	U. of Michigan, M., #3647
Saginaw	M-12r	Lincoln		Dustin, 1942, 509
Saginaw	M-12s	Andrews-Bl	4 Harrison-MV	Ritzenthaler & Quimby, 1962, 265

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County	Site No.	Site Name	Tt Type Designation	Reference
St. Charles	Mo.-1	Elm Point	5 Fulton-FV 1 Hebron	Titterington, 1950, p. 24

SITE INDEX FOR THE STATE OF KENTUCKY

County	Site No.	Site Name	Tt type Designation	Reference
Brechinridge	K-1		Fulton-FV	M.E. Hawes C.
Butler	K-2			B.w. Stephens C.
Christian	K-3a			A.G. Smith C.
Christian	K-3b			Brown, 1930, 101-
Graves	K-4		Harrison-MV	G. Perino C.
Hart	K-5		Harrison-MV	M, Meek C.
Jefferson	K-6a		Fulton-RV	B.W. Stephens C.
Jefferson	K-6b		1 Fulton-FV	G. Perino C.
McClean	K-7			ISASJ, 1949, 17
Marshall	K-8a		4 Harrison-MaV	G. Perino C.
Marshall	K-8b		Hebron	G. Perino C.
Meade	K-9		Fulton-KV	I.S. Dougherty C.
Trigg	K-10		Harrison-MV	B.W. Stephens C.

SITE INDEX FOR THE STATE OF NEW YORK

County	Site No.	Site Name	Ty type Designation	Reference
Monroe	NY-1		Fulton - FV	B.W. Stephens C.
Montgomery	NY-2	Palatine Bridge	Fulton - ?VB	Ritchie, 1944, 194, Pl. 90
Onondago	NY-3a		Harrison-MV	NYSM # 31443
Onondago	NY-3b		Fulton-RV	NYSM # 32604
Onondago	NY-3c		Fulton-FV	NYSM #32603
Onondago	NY-3d		Fulton-FV	Beauchamp, 1897, 45, Fig. 112
Onondago	NY-3e			Beauchamp, 1897, 45
Oswego	NY-4a	Oberlander #2	Hebron	Ritchie, 1944, 152-160, Pl. 71
Oswego	NY-4b		Fulton-?V	Beauchamp, 1897, 46, Fig. 116
Steuben	NY-5			E. Voelker C.

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County	Site No.	Site Name	Tt type Designation	Reference
Brown	O-1			OAHP, 1900, 344
Cuyahoga	O-2		Fulton-FV	G. Smith C.
Darke	O-3		Fulton-FV	M.E. Hawes C.
Hamilton	O-4		X Harrison-MaV X Harrison-MV X Fulton-FV	CSAJ, 1954, Fig. 72
Licking	O-5		Fulton-RV	G. Perino C.
Miami	O-6		*Harrison-MV	M. E. Hawes C.
Pike	O-7	McKenzie Mds.		Moorehead, 1900, 160-161, Fig. XXII
Ross	O-8a	Spetnagle	1 Fulton-St 1 Harrison-MV 1 Harrison-MaV 1 Fulton-RV	Anonymous, 1923, 638-640 Brown, 1930, 102
Ross	O-8b			Moorehead, 1900, 141, 153, Fig. X
Scioto	O-9	Feurt	Fulton-FV	Mills, 1917, 367, Fig. 37
Warren	O-10a		1 Fulton-FV	G. Perino C.
Warren	O-10b			Brown, 1930, 102

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County	Site No.	Site Name	Tt type Designation	Reference
Barron	W-1			M.P.M, #22856-22861
Brown	W-2			Brown, 1907,55
Calumet	W-3a	Paulsen	17 Fulton -?VB	M.P.M, # 2937-2953 Brown, 1907, 61
Calumet	W-3b	Hayssen		Wilson, 1899, 981 M.P.M., #2546
Chippewa	W-4			Brown, 1930, 100
Columbia	W-5			Brown, 1909, 118
Dane	W-6a			Wilson, 1899, 980
Dane	W-6b			Brown, 1912, 169
Dodge	W-7a			Brown, 1907, 62
Dodge	W-7b			Brown, 1907, 65
Door	W-8	Whitefish Bay		Brown, 1924, 70 Schumacher, 1918, 140-141
Fond du Lac	W-9			Brown, 1912, 174
Grant	W-10			Brown & Barton, 1916, 179
Green	W-11a			Brown, 1907, 60
Green	W-11b			Brown, 1912, 175
Green Lake	W-12a			Brown, 1907, 56-57
Green Lake	W-12b			Brown, 1907, 57
Jefferson	W-13a			Brown, 1924, 73
Jefferson	W-13b			Brown, 1907, 69-70
Juneau	W-14		2 Fulton-FV	Brown, 1930, 100; 1907, Pl. 5 Logan M., #A30-100
Kewaunee	W-15			Brown, 1909, 130
Manitowoc	W-16a	Reynolds		Falge, 1915, 146
Manitowoc	W-16b	Hagenow		Falge, 1915, 146
Manitowoc	W-16c	Melarsh Creek		Brown, 1907, 69, Pl. 8
Manitowoc	W-16d			Brown, 1907, 56
Manitowoc	W-16e	Hathaway		Falge, 1915, 149
Marinette	W-17	Chalk Hills		Brown, 1940, 75
Marquette	W-18			Brown, 1907, 60
Milwaukee	W-19a	Lyon		Brown, 1916, 93
Milwaukee	W-19b	Carey		Brown, 1916, 74-75 Brown, 1940, 75
Milwaukee	W-19c			Brown, 1916, 30
Milwaukee	W-19d		Hebron	J. Weida C., #00159
Milwaukee	W-19e		Harrison-?V	J. Weida C., #447
Milwaukee	W-19f			J. Weida C., #1636
Milwaukee	W-19g			J. Weida C., #631
Milwaukee	W-19h		Hebron	M.P.M., #50393
Oneida	W-20		Hebron	M.P.M., #5991
Outagamie	W-21a			Fox, 1916, 15
Outagamie	W-21b		1 Harrison-MV	Fox, 1916, 16

Ozaukee	W-22b	Thiensville	4 Hebron	Ritzenthaler & Nichol, 1956, 110-113
				Niehoff, 1959, 26- 27
			1 Harrison-MV	Quimby & Ritzenthaler, 1962, Fig. 123
Ozaukee	W-22c	Port Washington	Harrison-MV	Quimby, 1957, 1-3; MPM #13358
Racine	W-23a			Brown, 1940, 69
Racine	W-23b			Brown, 1940, 69-70
Racine	W-23c			W. Noble C.
Richland	W-24a	Richland Cache		Brown, 1907, 55
Richland	W-24b	Richland Cache		Brown, 1907, 55
Richland	W-24c			Brown, 1907, 55-56, Pl. 3
Richland	W-24d		Fulton-DV	MPM, # 22829
Rock	W-25a			Brown, 1907, 56
Rock	W-25b			Brown, 1930, 100
Rock	W-25c			Brown, 1906, 373
Sauk	W-26a	Snyder		Cole, 1922, 88, Pl. 1
Sauk	W-26b	Lyon's		Brown, 1907, 59
				Stout, 1906, 257, Pl. 4
Sauk	W-26c	Merrimack		Stout, 1906, 271
Sauk	W-26d	Meyer's Mill		Brown, 1907, 60, Pl. 4
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Shawano	W-27			Brown, 1907-68
			2 Fulton-KiV	M.P.M., #16593, 16594
Sheboygan	W-28a			Brown, 1925, 116
				Gerend, 1920, 189
Sheboygan	W-28b			Brown, 1907, 61
Sheboygan	W-28c			Brown, 1907, 65
Trempealeau	W-29		Hebron	M.P.M., #4336
Walworth	W-30		Harrison-MV	B.W. Stephens C.
Washington	W-31a			Brown, 1930, 100
Washington	W-31b		Hebron	J. Weida C., #293
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Waukesha	W-32b			Brown, 1909, 136
Waukesha	W-32c			Brown, 1930, 100
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				Brown, 1924, 80
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Waupaca	W-33b			Brown, 1924, 81
Waupaca	W-33c		Hebron	W. Noble C.
Waupaca	W-33d		2 Hebron	MPM, #16427, 16515
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Waushara	W-34b			Fox, 1916, 157
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Winnebago	W-35b			Brown, 1907, 56
Winnebago	W-35c			Overton, 1931, 58
Winnebago	W-35d			Brown, 1925, 142
Winnebago	W-35e		Hebron	J. Weida C., #1687
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THE BOOKSHELF

By

David A. Baerreis

and

Guest Reviewers

Volume 12, Number 4 of THE MICHIGAN ARCHAEOLOGIST is a thick number of about 100 pages containing seven articles grouped under the title, "Edge Area Archaeology." The title has reference to a research project financed by the National Science Foundation for which the editor of the journal, James E. Fitting, is also the principal investigator. Michigan is dominated by two great natural communities of plants and animals. To the north is the flora and fauna of the mixed coniferous-deciduous forests known as the Canadian Biotic Province while to the south is that of the eastern deciduous forest or Carolinian Biotic Province. The purpose of the project was to study the relationships of these major life zones to prehistoric cultures, particularly in the zone of transition between the two. Although this series of papers is only the first of an anticipated group to be derived from the study, since the procedures are applicable to a study of Wisconsin prehistory and, indeed, attention has already been focussed upon the same phenomenon in our state by a group of archaeologists working in Madison, the reports are particularly deserving of attention.

The phenomenon which they designate the "edge" is more appropriately and properly designated a tension zone or ecotone. The elements of the flora and fauna which make up a major biotic province are not uniformly distributed in space so that, when mapped, their ranges tend to coincide in a neat, precise border. Rather, the ranges of the characteristic species vary in extent so that when a composite map of superim-

posed range limits of many species is prepared, a zone emerges where many of these borders tend to coincide. This zone, or tension zone, is thus one which contains characteristic species of both major life zones. Ecologists have pointed out that the tension zone, in having many organisms characteristic of both provinces as well as some species that are restricted to the tension zone, may have a greater number and density of organisms than the flanking areas. This phenomenon has been designated the "edge-effect." Since we assume prehistoric man shows a close relationship to his environment, the Michigan research project obviously focusses upon an important natural phenomenon whose relationship to cultural phenomena needs to be understood.

Dr. Fitting's appraisal of the preliminary results of their investigation is not encouraging. He first notes that the transition zone was not as clear cut as they had originally thought. This, of course, one may say is simply a consequence of their failure to appreciate fully the nature of a tension zone which is perhaps implicit in their stress upon "edge" with its connotation of a clear border. A second appraisal of Dr. Fitting's is that they had failed to consider the potential carrying capacity of the provinces on either side of the tension zone. He indicates the area to the south of the tension zone (Carolinian) is characterized as being one of relatively high carrying capacity while that to the north (Canadian) is a low carrying capacity area. The tension zone, he suggests, is not a highly productive zone but rather one of intermediary capacity. Perhaps more of the supporting data for these generalizations will be presented in future reports. As the Michigan ecologist, Lee R. Rice, has pointed out in his book, **Natural Communities** (University of Michigan Press, 1952, p. 419), not every species of animal is most numerous at the borders of an ecosystem. It is of very great importance to know that particular effect so far as it involves species of plants and animals of economic importance to the prehistoric Indians. I should be more impressed by Dr. Fitting's characterization of the desert-like character of the pine zone to the north and the intermediate character of the transition zone were it not for the fact that Mr. Robert Salzer of Beloit College has been demonstrating how rich and dense

the prehistoric occupation is in a comparable province in Wisconsin.

At this point we may turn more specifically to the content of the articles included in this issue of the journal. Three papers representing the major content of the issue are devoted to reports on survey work. One, by Gary A. Wright, deals with the eastern portion of the tension zone in the Au Sable, Au Gres and Pine River drainages. Fel V. Brunett reports on the Manistee River in Central Michigan and Earl J. Prahl on the Muskegon River in Western Michigan. The latter covers the work of two seasons and includes excavation, particularly in Hopewell components. Of particular concern, where some survey work involves areas with a heavy vegetational cover, is whether the negative data in regard to site distribution may not be simply a reflection of the difficulty in locating sites.

Additional articles in the journal include an account of the excavation of the Whorley Earthwork in Branch County by John D. Speth. It consisted of a semicircular enclosure bordering on Gilead Lake and containing roughly an acre. Excavations revealed a palisade along the interior flank of the embankment and a radiocarbon date (M-1758) gave an age of A. D. 1080 + − 100. The limited Late Woodland pottery and small triangular projectile points recovered are in keeping with this date. A paper by Elizabeth M. Stern was designed to analyze approximately 800 ground stone axes, celts and adzes in order to establish whether there were differences between woodworking tools used by Indian groups to the north and south of the Carolinian - Canadian edge in Michigan. While the analysis contributed nothing toward this objective, it will be found of value as an indication of problems and procedures connected with the use of IBM 7090 in the classification of artifacts. The final paper by Arnold R. Pilling attempts to reconstruct the pattern of life at Porter Site 8 in Midland County and is reprinted from THE TOTEM POLE, the journal of the Aboriginal Research Club of Detroit.

It was mentioned earlier that we at Wisconsin are similarly involved in exploring archaeological sites within and across a tension zone, in part in our case in the expectation of reveal-

ing changing environmental conditions in the past through movement of the tension zone. Do the results of the Michigan investigations provide further encouragement to proceed in this manner or indicate a lack of utility in the approach? It is perhaps too early to judge the merits of the Michigan investigations since this is but their first report. The work thus far contains little data of an environmental character that would seem to permit sound reconstructions of the past or the relationships between environment and culture. Perhaps this is not to be expected in a series of reports emphasizing survey work, but even site distributions can be revealing. However, we lack even a single map that indicates the boundaries of the Canadian and Carolinian Provinces and the tension zone or "edge". If we turn to another Michigan report which will be reviewed in detail in a subsequent issue, **The Prehistoric Animal Ecology and Ethnozoology of the Upper Great Lakes Region** by Charles Edward Cleland (Anthropological Papers, Museum of Anthropology, University of Michigan, No. 29, 1966), we find that Figure 1 is a map of the biotic provinces of the Upper Great Lakes. Since Cleland was associated with the Edge Project, we assume it reflects the same orientation.

The map just cited suggests there is an important difference between the approach we have been using and that at Michigan. We have taken as a point of departure the vegetational studies summarized by the late John T. Curtis in his book, **The Vegetation of Wisconsin** (Madison, 1959). Curtis defined a prairie-forest floristic province in the southwestern-half of the state, the forest element being a southern-hardwood forest. A narrow tension zone separates this province from the northern floristic province of a conifer-hardwood character. If we compare these floristic provinces with those we have been discussing for Michigan, in the Michigan analysis the Wisconsin northern conifer-hardwood forest of Curtis is the equivalent of their Carolinian-Canadian tension zone and is so labeled on Cleland's map. The equivalent of the Canadian province appears in Wisconsin on the maps of Curtis (given as endplates in his book) only as the Boreal forest elements in the extreme northwestern and northeastern tips of the state. These differences in terminology are cited, not to quibble

about nomenclature, but because they reveal that the level of analysis at the two institutions are markedly different. The Michigan approach is on a far broader scale than we have utilized here. At their level of analysis, it would seem that our entire northern province is a transitional zone. It remains to be seen which level of analysis is more profitable from an archaeological viewpoint.

DAVID A. BAERREIS,
University of Wisconsin

BOOKS RECEIVED

PERU — By Rafael Larco Hoyle. Archaeologia Mundi Series. The World Publishing Co., Cleveland, Ohio, 1967. Price $10.00.

INDOCHINA — By Bernard Philippe Groslier. Archaeologia Mundi Series. The World Publishing Co., Cleveland, Ohio, 1967. Price $10.00.

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THE WISCONSIN ARCHEOLOGIST

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A CATALOGUE OF OLD COPPER ARTIFACTS IN THE NEVILLE PUBLIC MUSEUM

Carol Mason and Ronald J. Mason

The Old Copper culture has been one of the consistently important archaeological resources of the Upper Great Lakes area for almost a century. Considering the riches of available copper specimens, comparatively little is known about the people or their way of life from controlled excavation, and practically nothing is known of actual living sites. Because of this lack of knowledge and a surprising lack of published photographs of Old Copper artifacts, the public and private collections in Wisconsin are of particular interest to scholars attempting to learn about Old Copper through analysis of tools and their distribution. The collection of copper artifacts in the Neville Public Museum, Green Bay, is an important one, not only from the standpoint of the specimens themselves but also because of information provided on their locations. For the majority of the artifacts, the general locus of the find is known, and the remainder is almost certainly from within northeast Wisconsin or the Upper Peninsula of Michigan. Even though most of the material is from scattered surface finds or rare caches, it is therefore sufficiently localized for distribution studies. Indeed, some of the Neville Public Museum collection has already been employed in just such a study (Wittry 1851).

The great bulk of copper material in the Neville Public Museum is referable to the Old Copper culture itself although a few specimens included in the plates are certainly of later vintage (Pl. 12, 4, for example). Most of the artifacts are from the collection of J. P. Schumacher, one of the foremost archaeological pioneers in northeastern Wisconsin. Schumacher rather intensively collected artifacts and prepared site surveys several decades ago, and most of his material was subsequently acquired by the museum in Green Bay. Schu-

macher's work is of special interest since he seemed acutely aware of accurately recording where an object was found, Many of the artifacts from his collection are precisely detailed as to location with reference to section and range as well as township. However, even though Schumacher has been reputed to have employed a professional surveyor to help him, some skepticism has arisen as to how accurate his locations were (Burcaw 1953). In some cases, perhaps in most, this is because Schumacher faithfully recorded his every surface find as a "site," confusing those who expected sites in the modern sense of the term. Following the footsteps of J. P. Schumacher can be surprising in many ways; we were once refused access to a cow pasture for surface collecting on the grounds that J. P. Schumacher, when examining the same pasture decades earlier, had carelessly left the gate open and let out the cows! The sins of other generations of archaeologists apparently are visited on their descendents.

A smaller percentage of copper specimens is from the Frank B. Duchateau collection, in most respects a less satisfactory source. Duchateau's concern for Indian artifacts was part of a general urge to collect every conceivable kind of object, and his collection suffers from the lack of interest in depth in any one of them. Many of the Duchateau Old Copper specimens are only incidentally identified with a geographic area, and the major focus of attention seems to have been on who collected an artifact rather than where it was found. Duchateau, however, like Schumacher, seems to have been a local collector, particularly of Old Copper specimens; and even those of his artifacts without minimal data on location are very probably from northeast Wisconsin or the Upper Peninsula of Michigan.

The major part of the Neville Museum collection is illustrated in the 32 plates. Corresponding captions indicate the museum numbers, the name of the sub-collection to which each specimen belongs, and the general location of the find within a township or city boundary. Hence most of the geographical names (from Wisconsin) should be prefaced by the term "township of" rather than referring to specific towns and villages. This form of identification in the museum catalogue has resulted in some confusion since it is now impossible to de-

cide, for example, whether Schumacher's reference to a find in Green Bay refers to the city or the distinctly separate township of the same name. Schumacher's occasional use of special local names is another source of confusion. Few people now remember the names of local steamer stops or geographical landmarks that have disappeared since Schumacher used them as reference points. In most cases, his site names have been verified, but some of them remain quite unintelligible. Changes in maps since Schumacher's time have certainly influenced the use or disuse of particular local names. All artifacts, unless otherwise indicated, are from Wisconsin.

A word should be said about museum number for the benefit of scholars interested in using the collection in the future. The specimens were originally catalogued at different times and with at least two separate systems operating, one a museum accession system and the other a general catalogue system. It is not always possible to determine which of the two numbers on many of the artifacts belongs to which system, and often both catalogues must be consulted before a particular specimen can be tied to pertinent catalogue information. Additionally, some of the numbers are difficult to read now even with hand lens and strong lighting.

The principal body of Old Copper specimens not illustrated here consists of 45 socketed spearpoints. These were not photographed in order to avoid duplication in the plates and thereby keep down publication costs. However, the catalogue numbers, locations and metrical descriptions of the complete specimens are included in Table 1. Figure 1 identifies the flange types listed in Table 1 only by their numbers. There are also a dozen celts, several awls, tanged points, and conical points which were not photographed, as well as many identifiable copper scraps.

Finally, appreciation must be fully expressed to the Neville Public Museum and its director, James L. Quinn, for permismission to examine, photograph, and publish this catalogue of Old Copper artifacts. Financial support in the publication of the photographs is greatly appreciated. In its Old Copper collection, the Neville Museum ably demonstrates its value

as a regional repository for the significant archaeological material of its area.

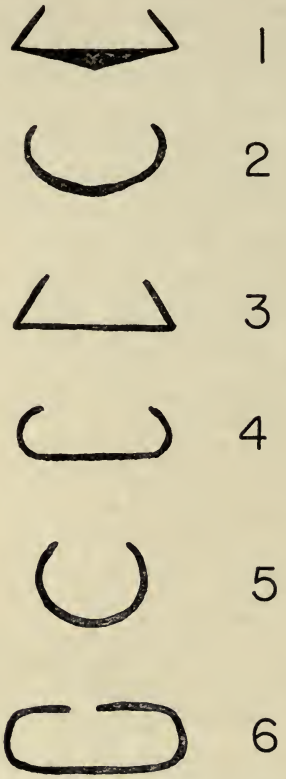

Figure 1. Socketed Spearpoint Flange Types.

University of Wisconsin
Menesha, Wisconsin
Lawrence University
Appleton, Wisconsin

Works cited:

Burcaw, Ellis

1953 Green Bay Chapter Report. The Wisconsin Archeologist. Vol. 34, no. 3, pp. 177-179.

Wittry, Warren L.

1951 A Preliminary Study of the Old Copper Culture. The Wisconsin Archeologist. Vol. 32, no. 1, pp. 311-329.

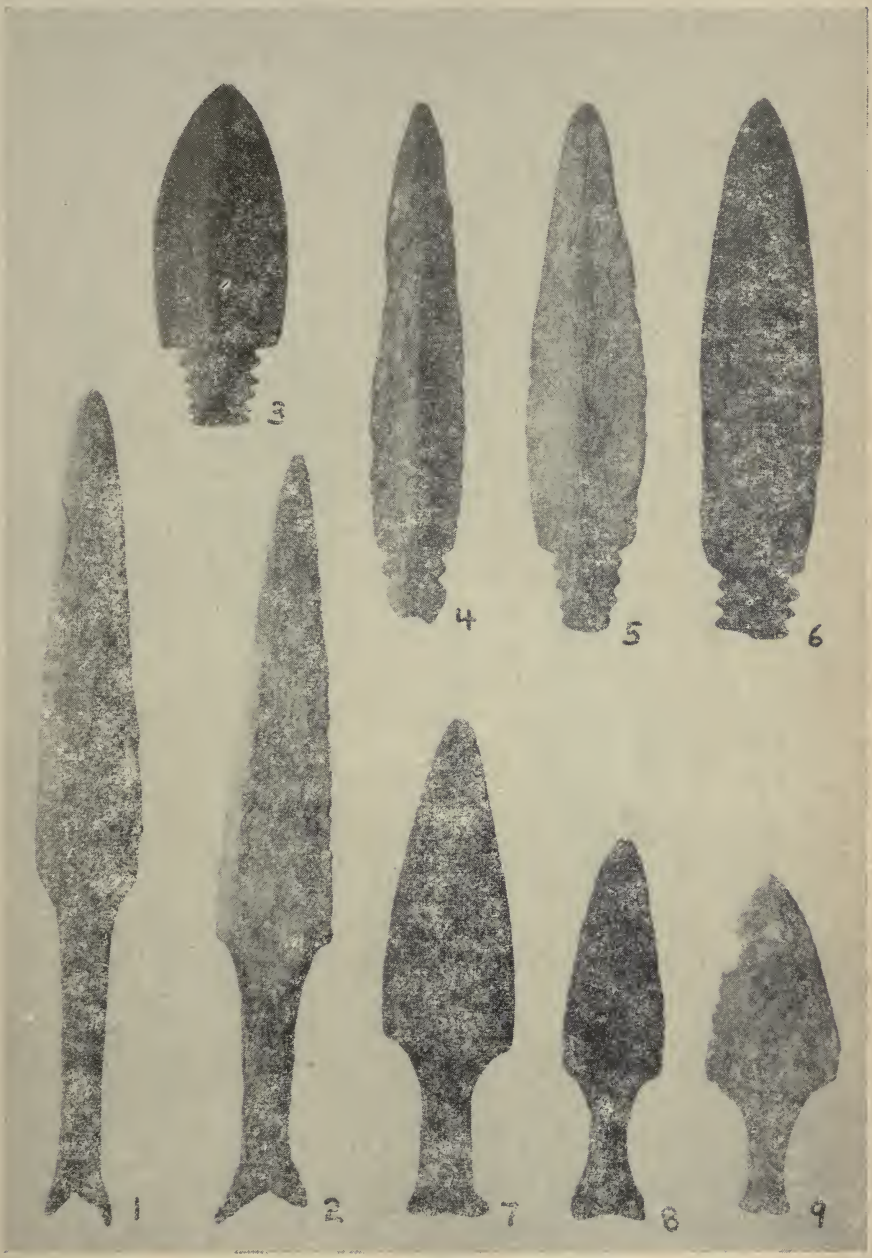

Plate 1. Top row: Serrate-tang points. Lower row: Fish-tail tang points.

Plate 2. "Rat tail" tanged points.

PLATE 1

1. 4265/683 Schumacher coll. Bailey's Harbor, Door County.
2. 4160/503 Schumacher coll. Little Suamico, Oconto Co.
3. 3640/289 Schumacher coll. Stiles, Oconto Co.
4. 3639/290 Schumacher coll. No data on location.
5. 4161/503 Schumacher coll. Morgan, Oconto Co.
6. 8634 Duchateau coll. no data on location.
7. 1636 Duchateau coll. near Shawano River.
8. 8637 Duchateau coll. no data on location.
9. 3628/251 Schumacher coll. Green Bay, Brown Co.

PLATE 2

1. 3644/ 244 Schumacher coll. Belgium, Ozaukee Co.
2. 4349/1026 Schumacher coll. north of Menominee, Menominee Co., Michigan.
3. 3645/ 248 Schumacher coll. Stiles, Oconto Co.
4. 3648/ 245 Schumacher coll. Pittsfield, Brown Co.
5. 3646/ 249 Schumacher coll. Suamico, Brown Co.

PLATE 3

1. 3368 Duchateau coll. probably from near Merrilan, Jackson Co.
2. 232/6833 Schumacher coll. Kaukauna, Outagamie Co.
3. 3647/ 233 Schumacher coll. Spruce, Oconto Co.
4. 277/ 198 Schumacher coll. no data on location
5. 4212/ 566 Schumacher coll. Oconto, Oconto Co.
6. 2028 Duchateau coll. probably from Oconto Co.
7. 4353/1026 Schumacher coll. Sobieski (Sobiesky?), Michigan.
8. 3649/ 246 Schumacher coll. Suamico, Brown Co.

PLATE 4

1. 473/ 198 Schumacher coll. Masonville-Rapid River area, Delta Co., Michigan.
2. 3629/ 247 Schumacher coll. Armstrong, Oconto Co.
3. 4384/1059 Schumacher coll. Amherst, Portage Co.
4. 3633/ 256 Schumacher coll. Jacksonport, Door Co.
5. 745/ 212 Schumacher coll. Underhill, Oconto Co.
6. 4416/1202 Crivitz coll. Stephenson, Marinette Co.
7. 3632/ 252 Schumacher Coll. Jacksonport, Door Co.
8. 743/ 212 Schumacher coll. Bradley, Lincoln Co.

Plate 3. Pinched-tanged points.

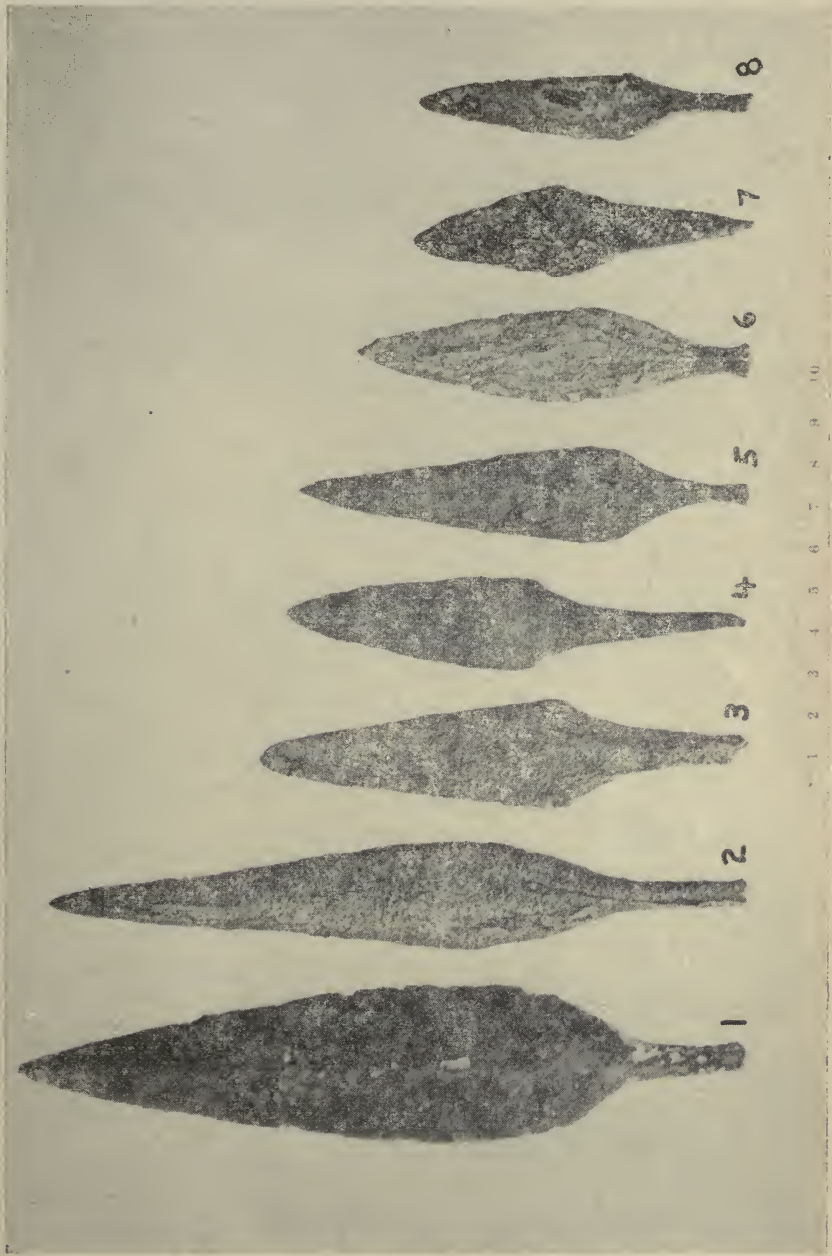

Plate 4. Simple-tanged points.

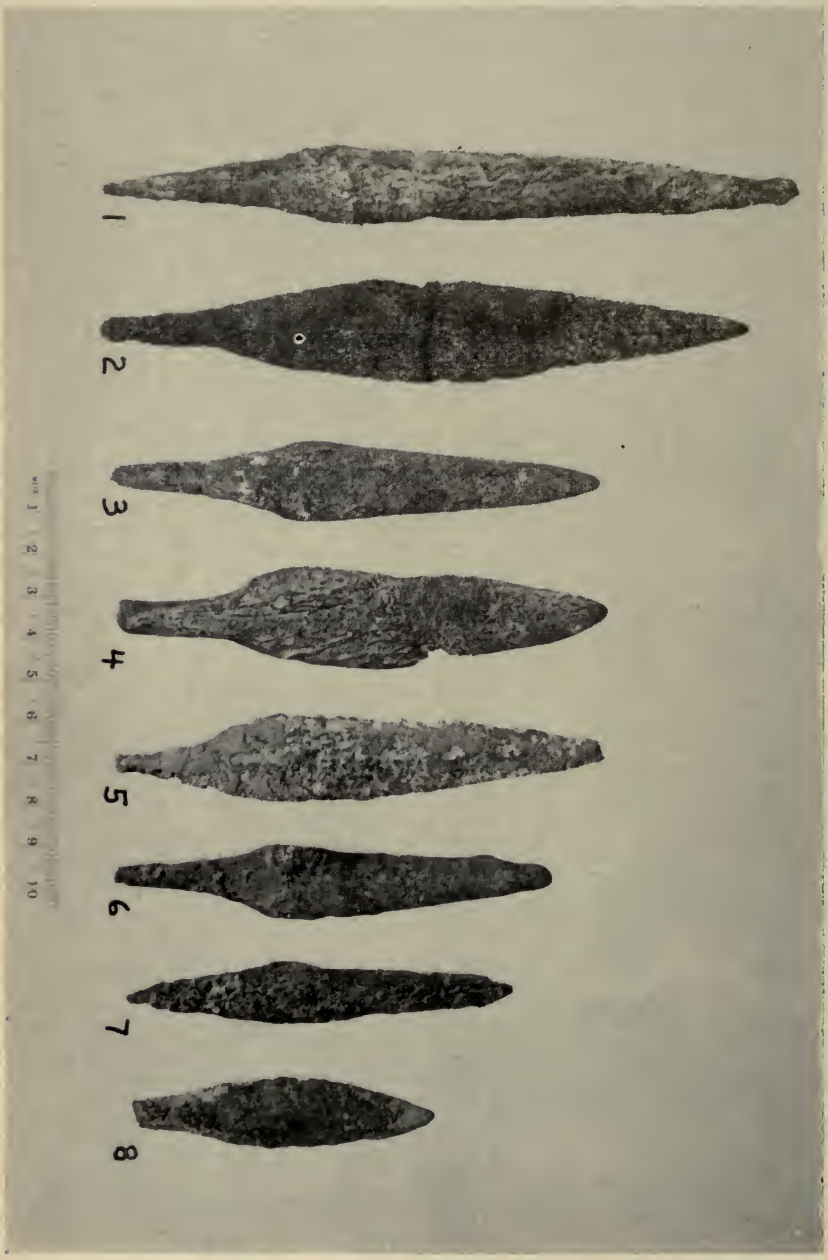

Plate 5. Simple-tanged points.

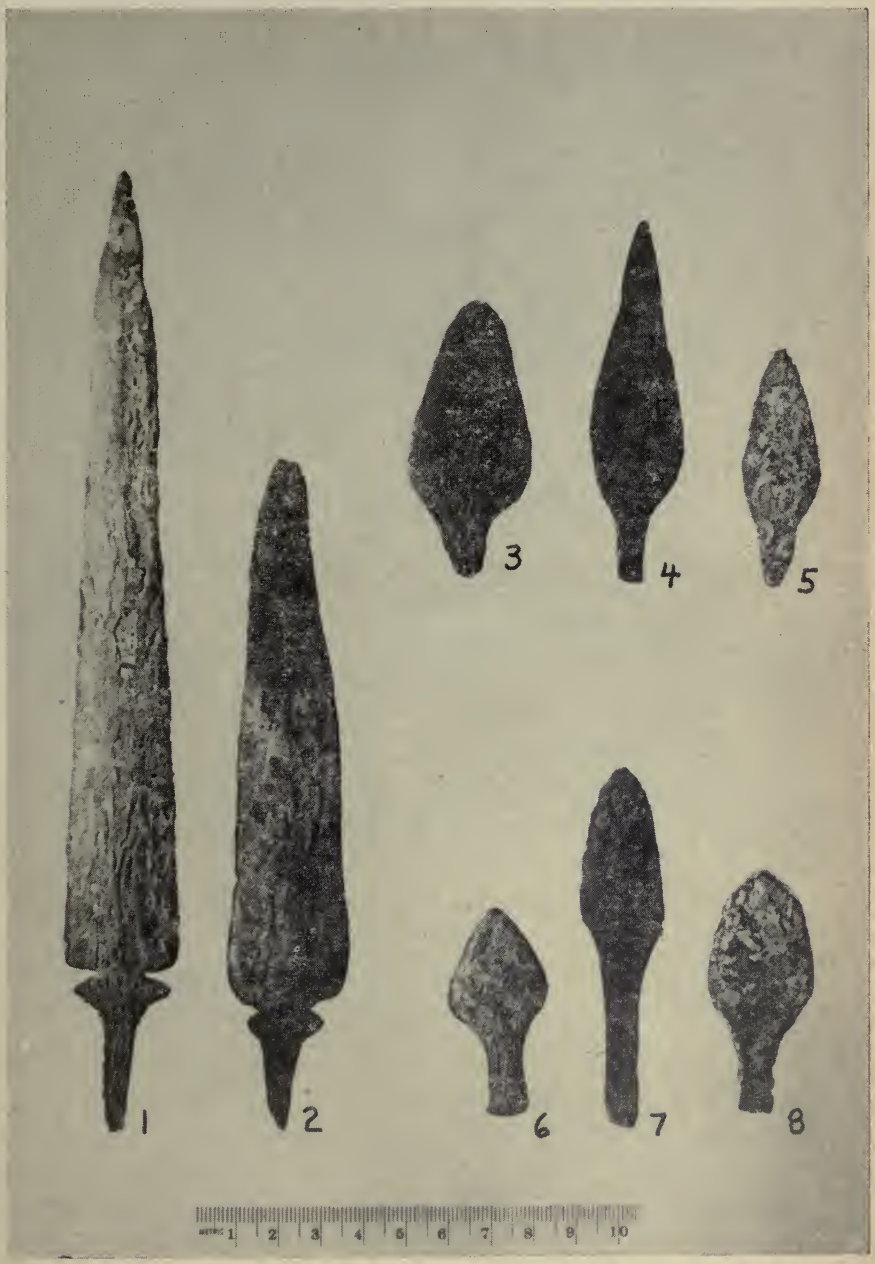

Plate 6. Projectile points. 1, 2: split-shouldered; 3, 4, 5: simple-tanged; 6, 7, 8: "Ace of Spades."

PLATE 5

1. 5066 Duchateau coll. Scott, Brown Co.
2. 8635 Duchateau coll. no data on location.
3. 1635 Duchateau coll. Scott, Brown Co.
4. 312/ 198 Schumacher coll. no data on location
5. 4445/1236 Schumacher coll. Marinette Co.
6. 3634/ 253 Schumacher coll. Howard, Brown Co.
7. 3394 Duchateau coll. probably Suamico, Brown Co.
8. 3652/ 229 Schumacher coll. no data on location.

PLATE 6

1. 4357 Duchateau coll. no data on location.
2. 8639 Duchateau coll. no data on location.
3. 3301 Duchateau coll. perhaps from Suamico, Brown Co.
4. 3630/ 255 Schumacher coll. no data on location.
5. 482/ 198 Schumacher coll. Masonville-Rapid River area, Delta Co., Michigan.a
6. 734/ 212 Schumacher coll. Mukwa, Waupaca Co.
7. 3636/ 258 Schumacher coll. Garden Bay, Delta Co., Michigan.
8. 4354/1026 Schumacher coll. Waucedah, Dickinson Co., Michigan.

PLATE 7

1. 3622/ 259 Schumacher coll. no data on location.
2. 3069 Duchateau coll. probably Suamico, Brown Co.
3. 4092 Duchateau coll. Mill Home, Manitowoc Co.
4. 4503/1418 Okray coll. Buena Vista, Portage Co.
5. 4441/1236 Schumacher coll. Lake, Marinette Co.
6. 4690 Duchateau coll. probably Suamico, Brown Co.
7. 750/ 212 Schumacher coll. Brazeau, Oconto Co.

PLATE 8

1. 4390/1059 Schumacher coll. Waupaca, Waupaca Co.
2. 4446/1236 Schumacher coll. Royalton, Waupaca Co.
3. 3662/ 321 Schumacher coll. Pittsfield, Brown Co.
4. 3660/ 319 Schumacher coll. "city gravel pit" (Green Bay?).
5. 4549/1486 Schumacher coll. Gillett, Oconto Co.
6. 3625/ 316 Schumacher coll. Preble, Brown Co.
7. 2936/ 317 Schumacher coll. Angelica, Shawano Co.
8. 4388/1059 Schumacher coll. Mukwa, Waupaca Co.

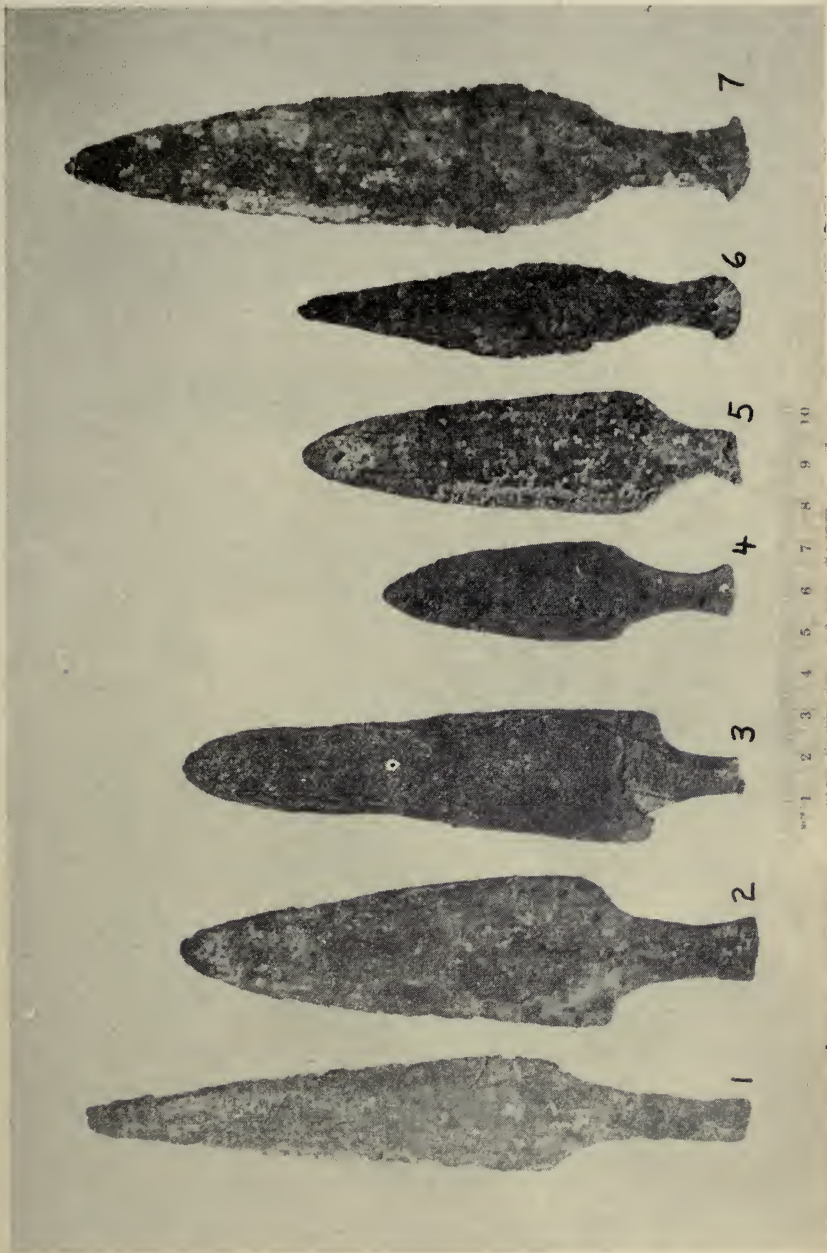

Plate 7. Projectile points. 1, 2, 3: simple-tanged; 4, 5, 6, 7: flared-tanged.

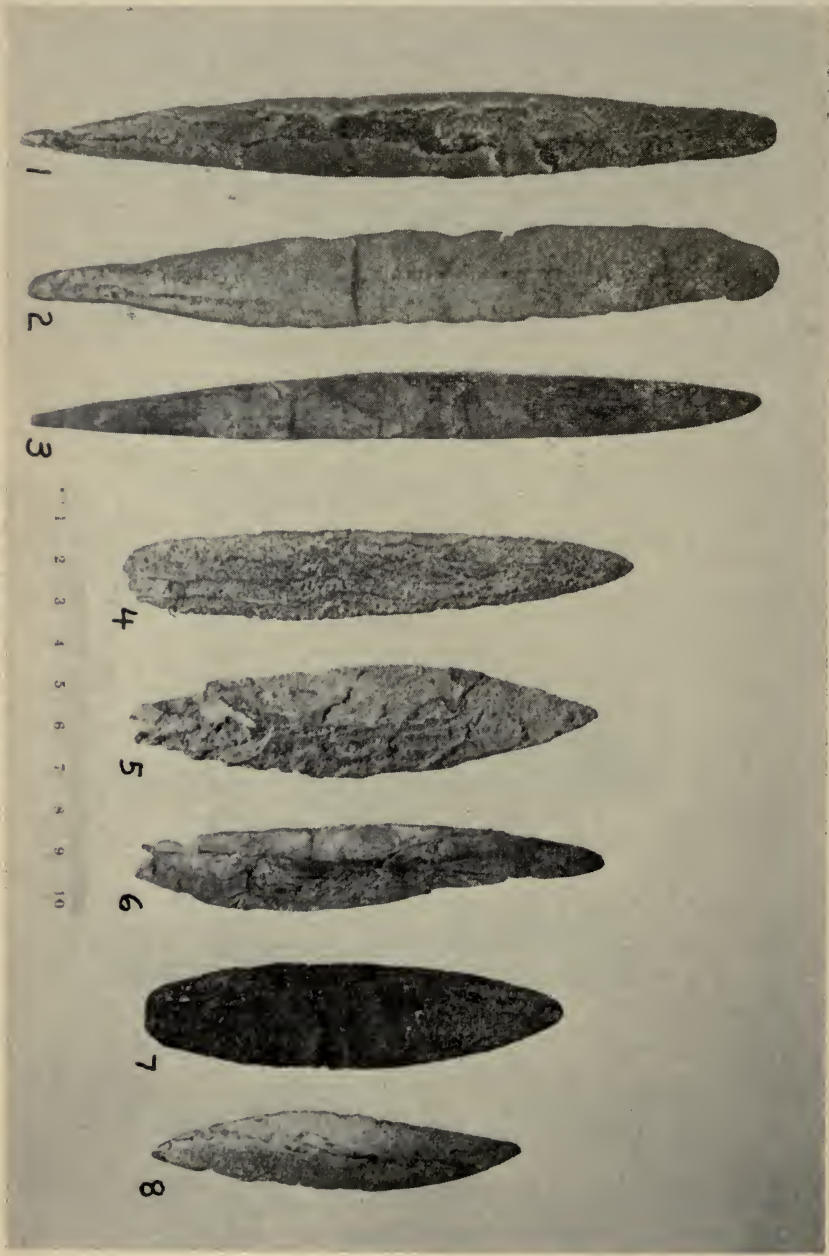

Plate 8. Spatulate knives.

Plate 9. Socketed knives.

Plate 10. Curved knives (some probably post-Archaic).

PLATE 9

1. 4229/ 683 Schumacher coll. Vulcan, Dickinson Co., Michigan.
2. 3665/ 327 Schumacher coll. Beaver, Marinette Co.
3. 3666/ 323 Schumacher coll. Beaver, Marinette Co.
4. 3667/ 322 coll? Mequon, Ozaukee Co.

PLATE 10

1. 4352/1026 Schumacher coll. Mellon, Menominee Co., Michigan.
2. 324/3696 Schumacher coll. Sturgeon Bay, Door Co.
3. 2905/ 326 Schumacher coll. near Keshena (Menominee Co.) and Gresham (Shawano Co.)
4. 4442/1236 Schumacher coll. Lake, Menominee Co., Michigan.

PLATE 11

1. 4550/1486 Schumacher coll. Iola, Waupaca Co.
2. 748/ 212 Schumacher coll. Wausaukee, Marinette Co.
3. 749/ 212 Schumacher coll. Menominee Co., Michigan.
4. 490/ 198 Schumacher coll. Rapid River, Delta Co., Michigan.
5. 4228/ 683 Schumacher coll. Vulcan, Dickinson Co., Michigan.
6. 485/ 198 Schumacher coll. Rapid River, Delta Co., Michigan.
7. 3027/ 318 Schumacher coll. no data on location.

PLATE 12

1. 4439/1236 Schumacher coll. Lake, Marinette Co.
2. 2027 Duchateau coll. Suamico, Brown Co.
3. 3661/ 315 Schumacher coll. Ashwaubenon, Brown Co.
4. 746/ 212 Schumacher coll. Garden Bay, Delta Co., Michigan.
5. 1341 Duchateau coll. Red Banks, Brown Co.
6. 4509 Duchateau coll. no data on location.
7. 5484/ 325 Platten coll. Green Bay, Brown Co.
8. 2143 Duchateau coll. probably Shawano, Shawano Co.
9. 8652 Duchateau coll. no data on location.
10. 747/ 212 Schumacher coll. Crivitz, Marinette Co. (near Left Foot Lake).

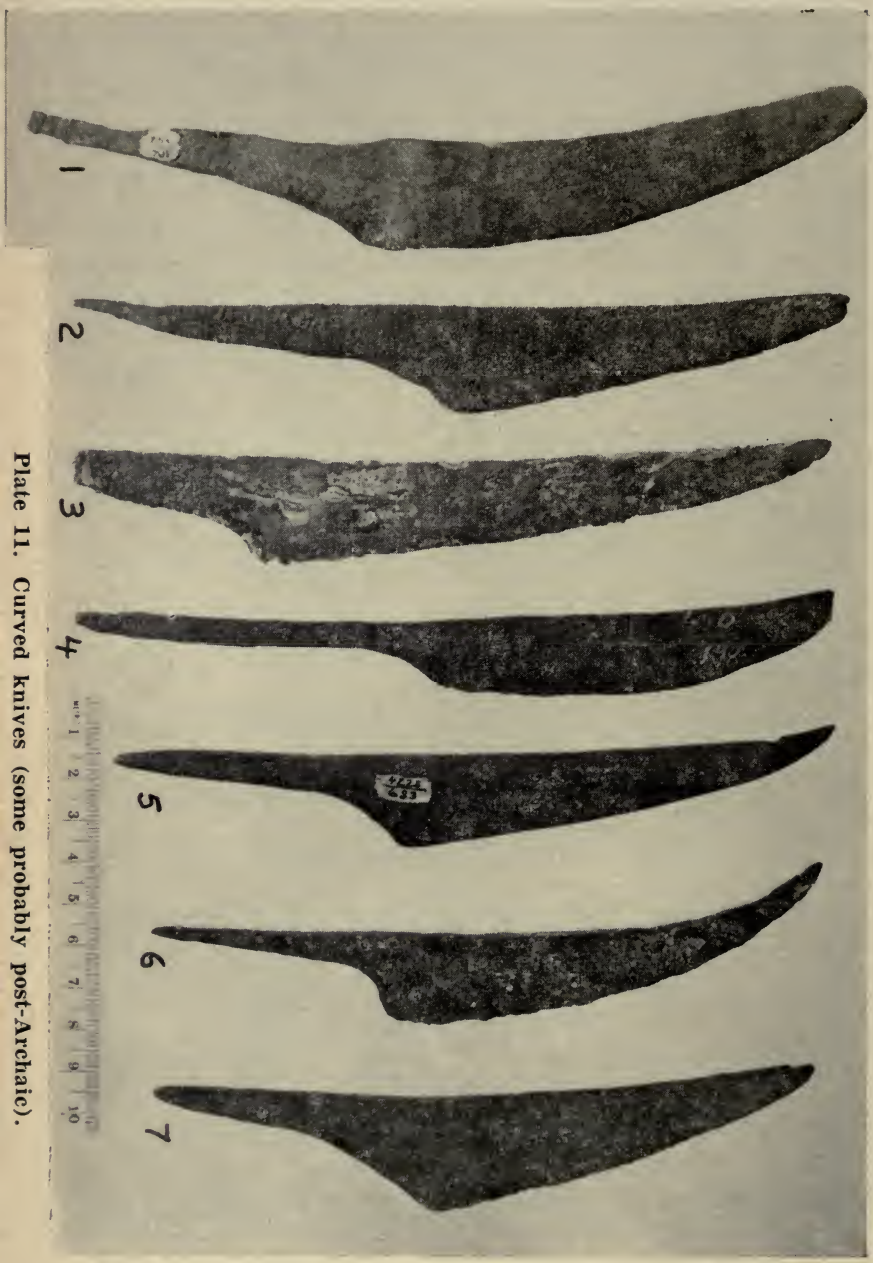

Plate 11. Curved knives (some probably post-Archaic).

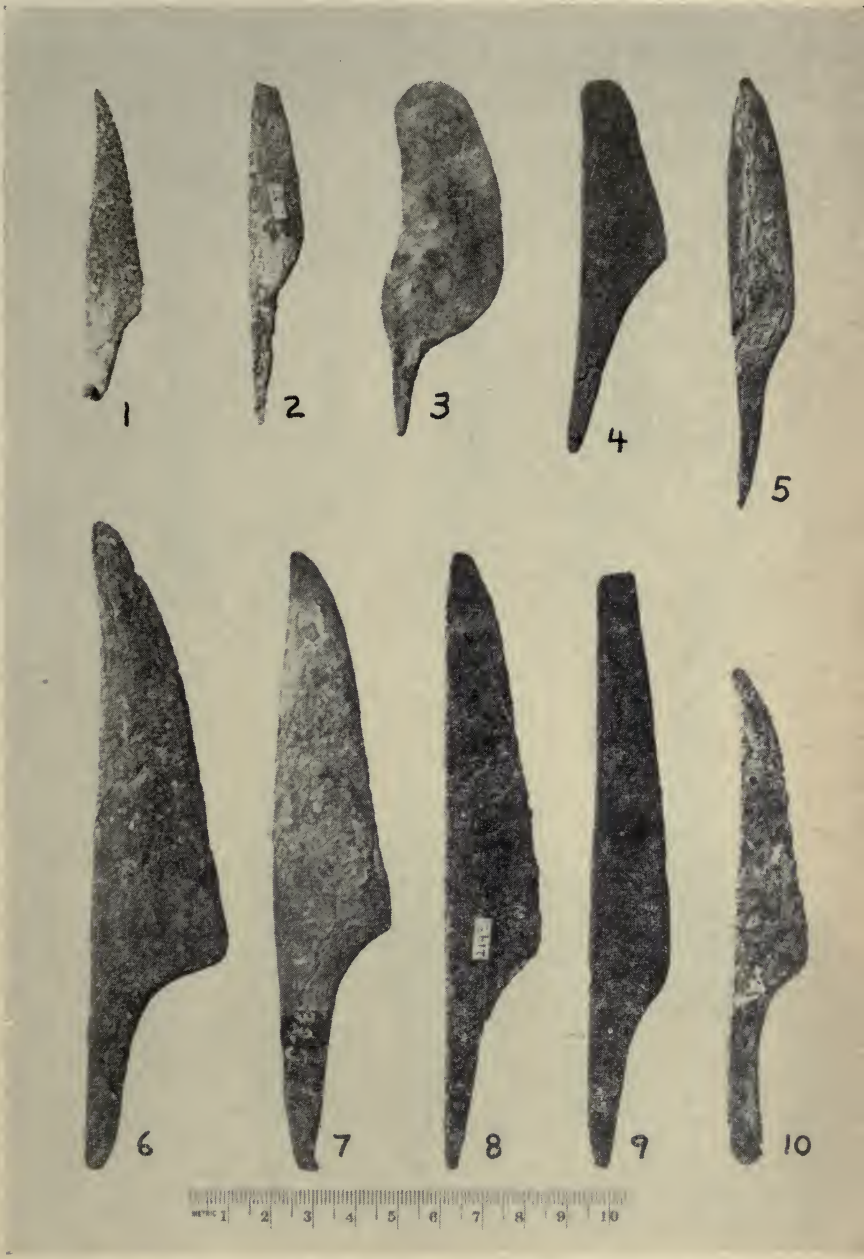

Plate 12. Curved knives (some probably post-Archaic).

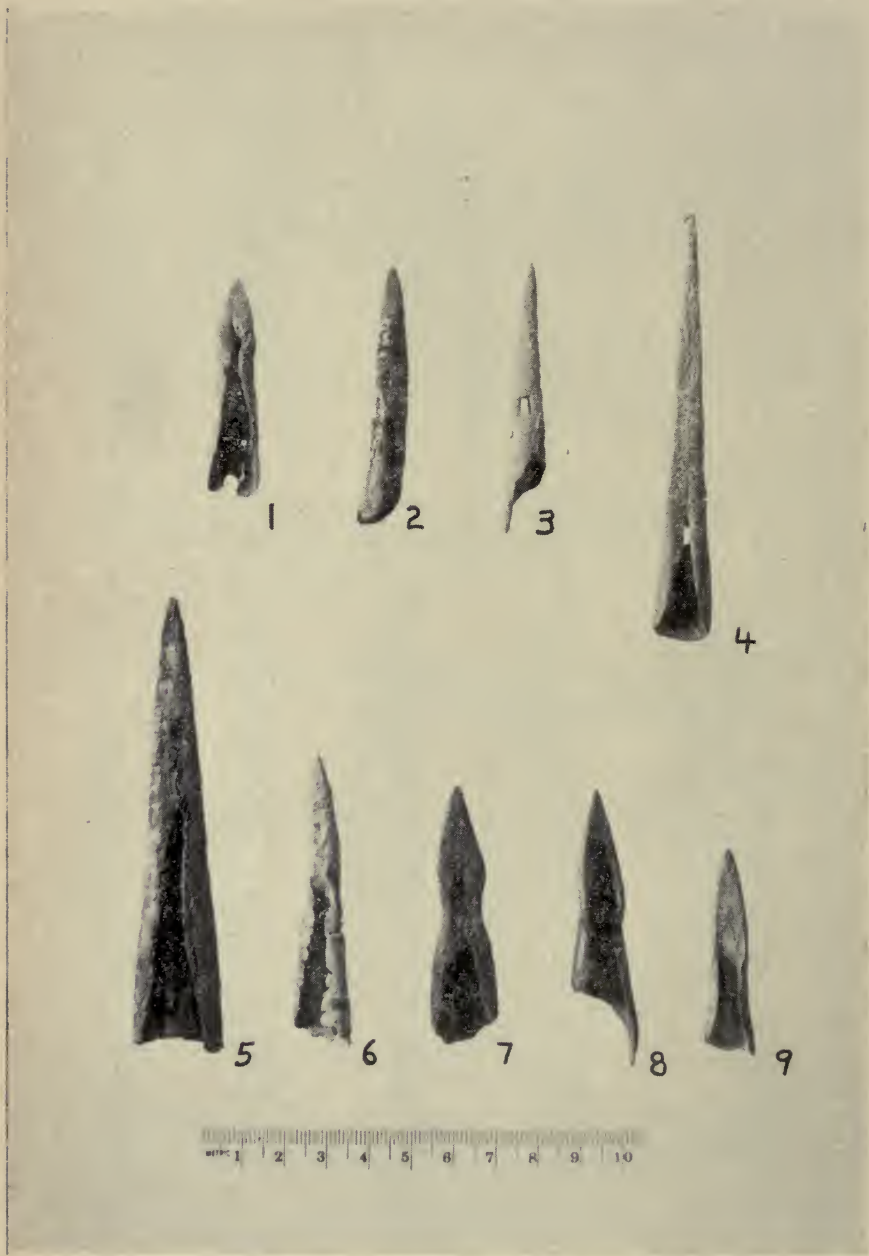

Plate 13. Conical and quasi-conical socketed points (2 and 3 possibly toggle harpoon heads).

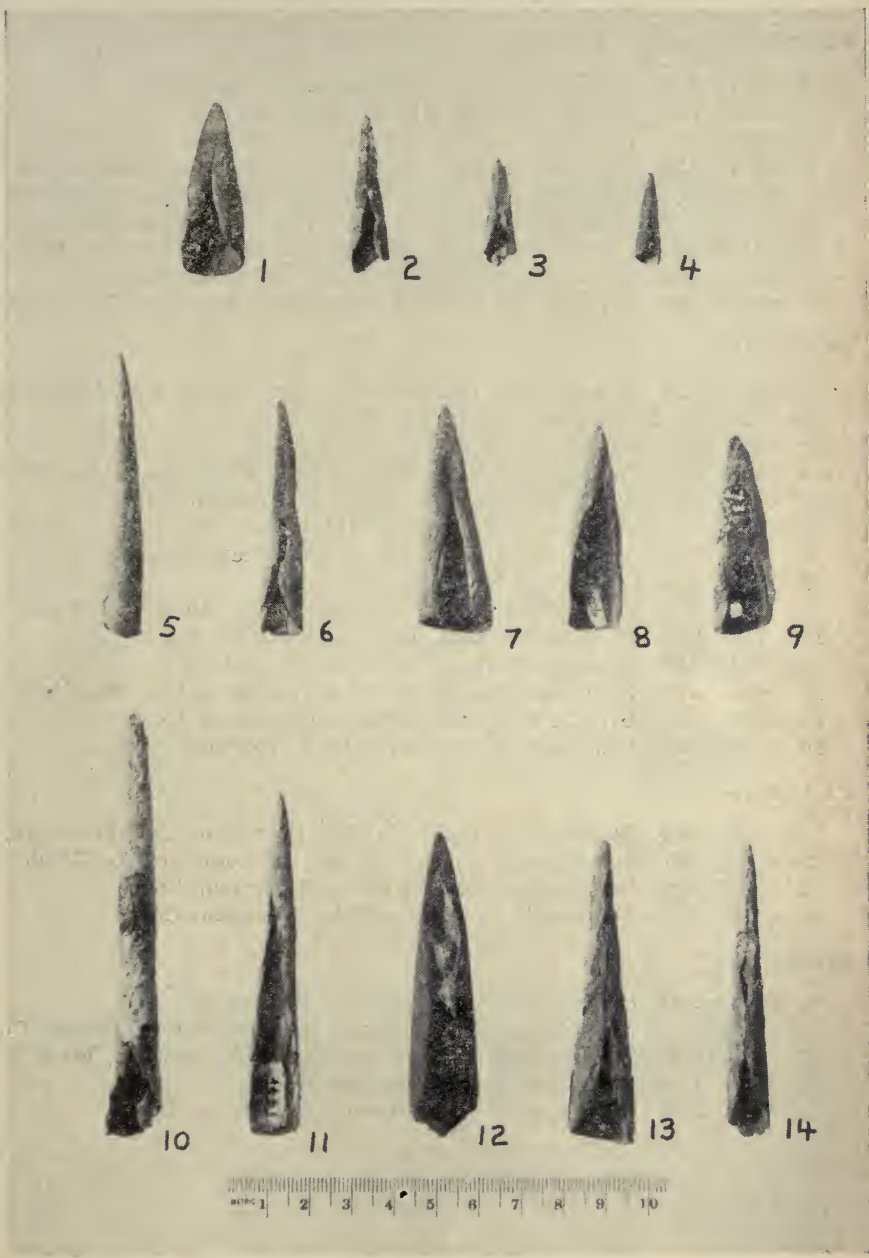

Plate 14. Conical socketed points (some probably post-Archaic).

PLATE 13

1. 737/ 212 Schumacher coll. Ellison Bay, Door Co.
2. 3654/ 226 Schumacher coll. Stiles, Oconto Co.
3. 4359/1026 Schumacher coll. Menominee, Menominee Co., Mich.
4. 4292/ 886 Schumacher coll. near Shawano Lake, Shawano Co.
5. 5072 Duchateau coll. probably from Mill Home, Manitowoc Co.
6. 740/ 212 Schumacher coll. Garden Bay, Delta Co., Michigan.
7. 3616/ 223 Schumacher coll. Menominee, Menominee Co., Mich.
8. 1902 Duchateau coll. near White Clay Lake, Shawano Co.
9. 4360/1026 Schumacher coll. Menominee, Menominee Co., Mich.

PLATE 14

1. 738/ 212 Schumacher coll. Garden Bay, Delta Co., Michigan.
2. 1434 Duchateau coll. Suamico, Brown Co.
3. 1433 Duchateau coll. Suamico, Brown Co.
4. 4363/1026 Schumacher coll. Menominee, Menominee Co., Mich.
5. 6835/ 243 Howard coll. Nakomis Lake, Lincoln Co.
6. 1584 Duchateau coll. Suamico, Brown Co.
7. 4272/ 683 Schumacher coll. Red River, Kewaunee Co.
8. 1506 Duchateau coll. Suamico, Brown Co.
9. 736/ 212 Schumacher coll. Whitefish River, Delta Co., Mich.
10. 741/ 212 Schumacher coll. Mukwa, Waupaca Co.
11. 4451/1236 Schumacher coll. no data on location.
12. 484/ 198 Schumacher coll. Rapid River, Delta Co., Michigan.
13. 739/ 212 Schumacher coll. Pierce, Kewaunee Co.
14. 4449/1236 Schumacher coll. no data on location.

PLATE 15

1. 422/ 683 Schumacher coll. Vulcan, Dickinson Co., Michigan.
2. 4370/1026 Schumacher coll. Faithorn, Menominee Co., Mich.
3. 4075/ 285 Schumacher coll. Humboldt, Brown Co.
4. 4162/ 503 Schumacher coll. Angelica, Shawano Co.

PLATE 16

1. 4065/ 268 Schumacher coll. Preble, Brown Co.
2. 3612/ 260 Schumacher coll. probably near Mountain, Oconto Co.
3. 4366/1026 Schumacher coll. Waucedah, Dickinson Co., Mich.
4. 4393 Duchateau coll. no data on location.
5. 4064/ 274 Schumacher coll. Preble, Brown Co.

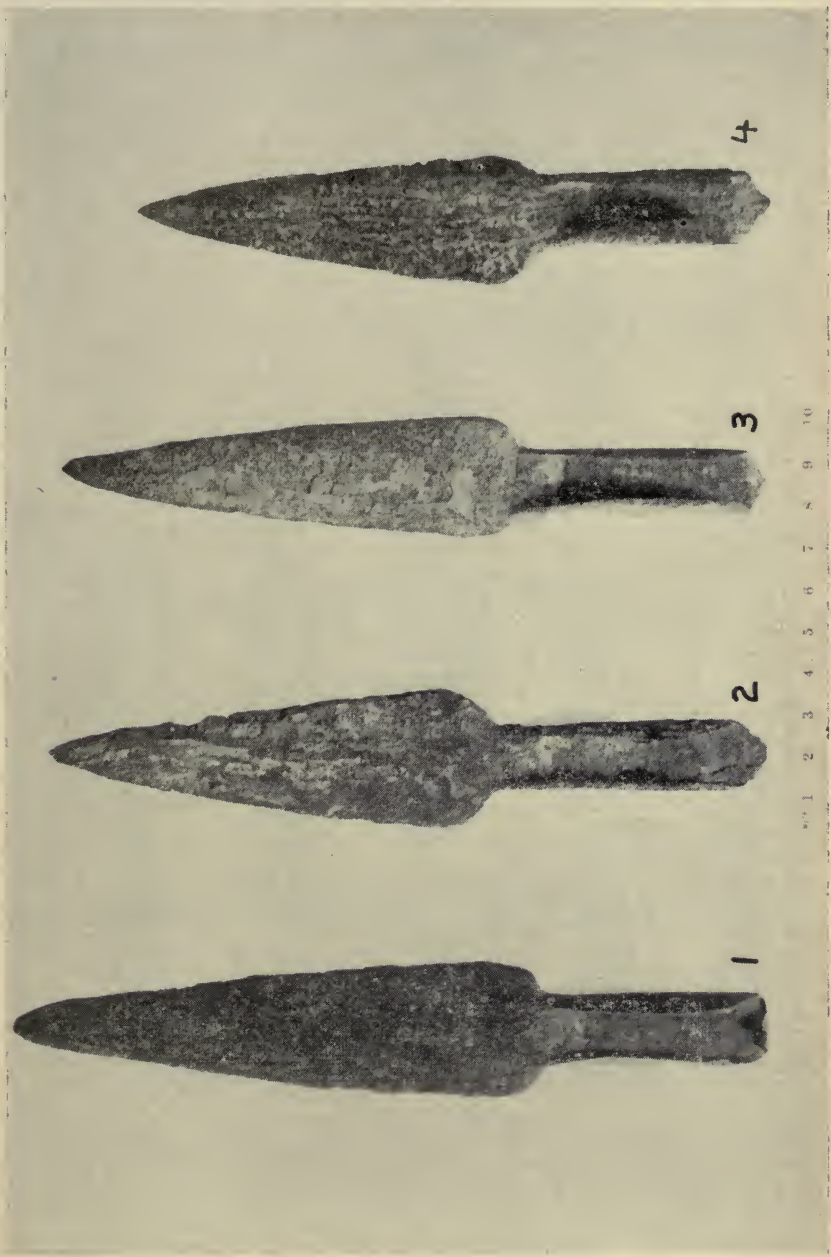

Plate 15. Socketed spearpoints.

Plate 16. Socketed spearpoints.

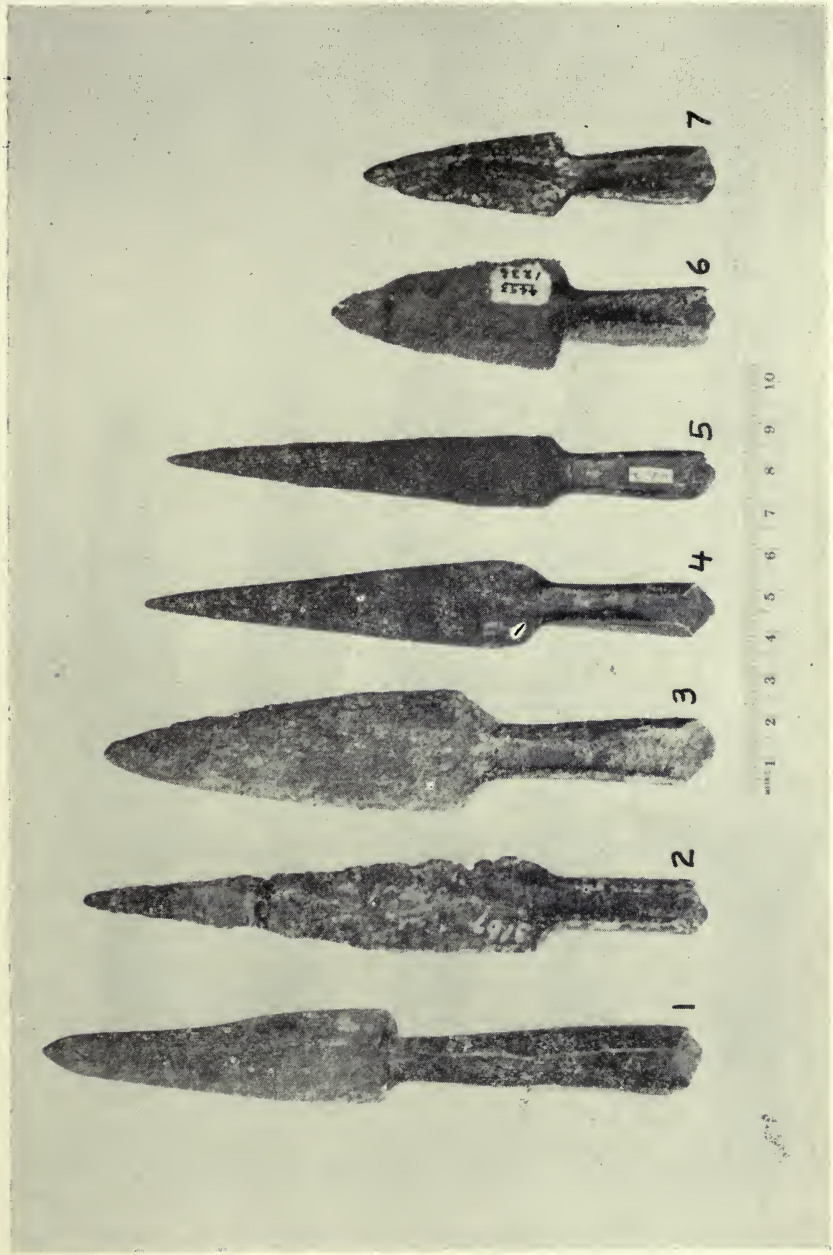

Plate 17. Socketed spearpoints.

Plate 18. Socketed spearpoints.

PLATE 17

1. 2193 Duchateau coll. Bay Settlement, Brown Co.
2. 3167 Duchateau coll. no data on location.
3. 3602/ 263 Schumacher coll. Preble, Brown Co.
4. 4386/1059 Schumacher coll. Pierce, Kewaunee Co.
5. 4372 Duchateau coll. Kaukauna, Outagamie Co.
6. 4453/1236 Schumacher coll. Lake, Menominee Co., Michigan.
7. 4234/ 683 Schumacher coll. Marinette, Marinette Co.

PLATE 18

1. 4385/1059 Schumacher coll. Holmes, Menominee Co., Mich.
2. 4443/1236 Schumacher coll. Lake, Menominee Co., Mich.
3. 4289/ 886 Schumacher coll. Bailey's Harbor, Door Co.
4. 3607/ 272 Schumacher coll. Faithorn, Menominee Co., Mich.
5. 491/ 198 Schumacher coll. Chalk Hill, Menominee Co., Mich.

PLATE 19

1. 4291/ 886 Schumacher coll. Wausaukee, Marinette Co.
2. 350 Duchateau coll. perhaps Suamico, Brown Co.
3. 4240/ 683 Schumacher coll. Stephenson, Menominee Co., Mich.
4. 2257 Duchateau coll. probably from Door Co.
5. 3613/ 281 Schumacher coll. Preble, Brown Co.
6. no catalogue number Duchateau coll.? no data on location.
7. 3391 Duchateau coll. probably from Suamico, Brown Co.
8. 4238/ 683 Schumacher coll. Stephenson, Marinette Co.
9. 4235/ 683 Schumacher coll. Belle Plaine, Shawano Co.
10. 4239/ 683 Schumacher coll. Brazeau, Oconto Co.
11. 4231/ 683 Schumacher coll. on Menominee River, north of Faithorn, Michigan.
12. 4367/1026 Schumacher coll. Norway, Dickinson Co., Michigan.

PLATE 20

1. 3666/ 283 Schumacher coll. Jacksonport, Door Co.
2. 4392 Duchateau coll. no data on location.
3. 3070 Duchateau coll. probably from Suamico, Brown Co.
4. 3392 Duchateau coll. no data on location.
5. 4444/1236 Schumacher coll. Lake, Menominee Co., Michigan.
6. 2909/ 284 Schumacher coll. Ashwaubenon, Brown Co.
7. 4287/ 886 Schumacher coll. Blackwell, Forest Co.
8. 3614/ 262 Schumacher coll. no data on location.
9. 3337 Duchateau coll. Red Banks, Brown Co.
10. 3393 Duchateau coll. probably from Suamico, Brown Co.

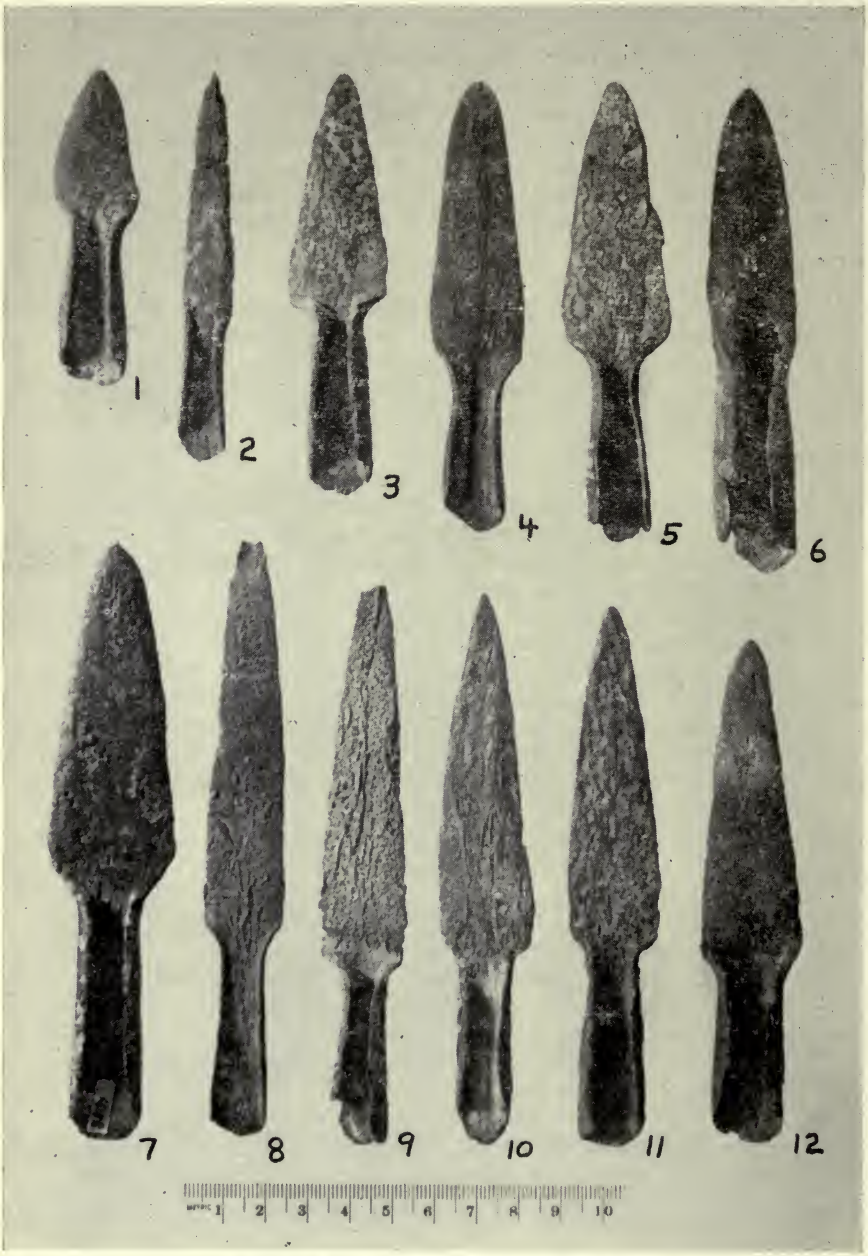

Plate 19. Socketed spearpoints.

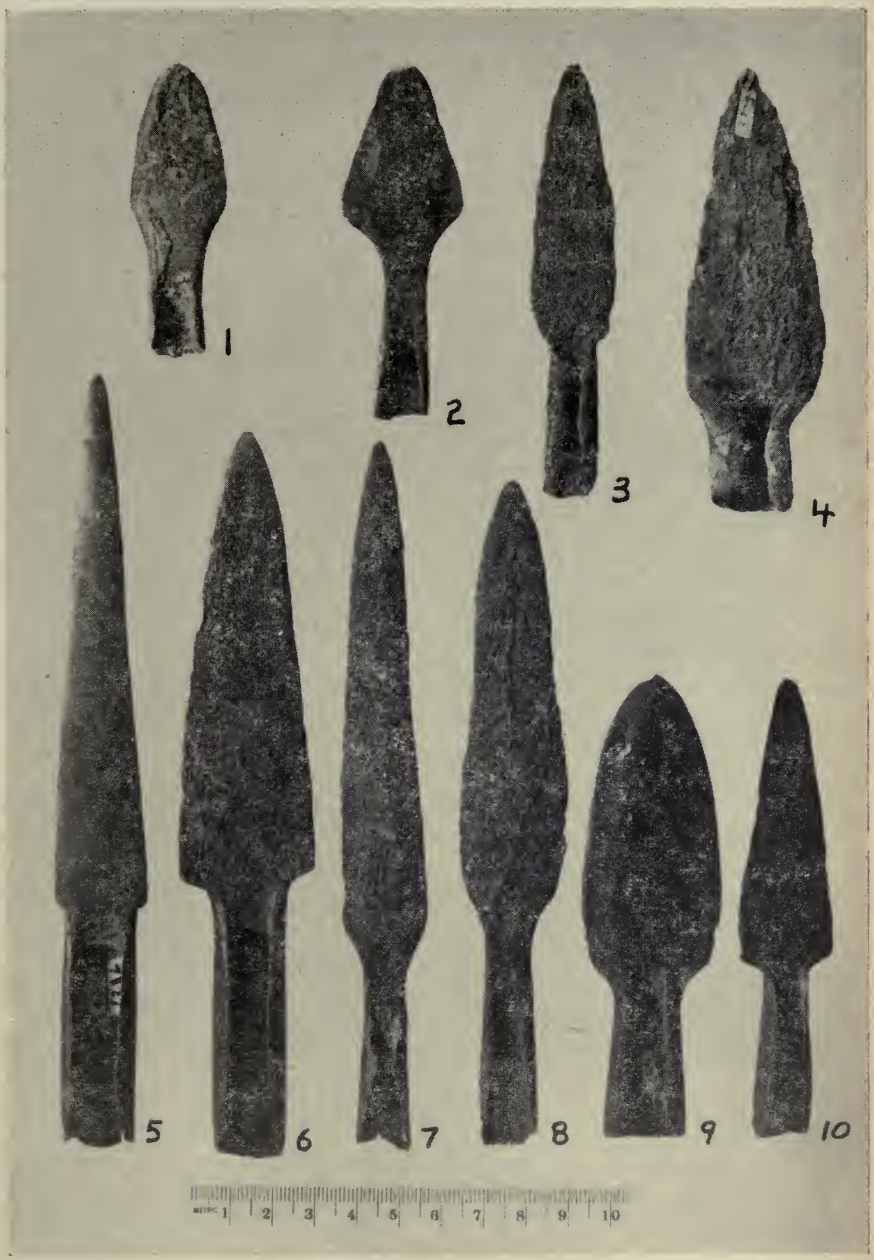

Plate 20. Socketed spearpoints.

Plate 21. Socketed spearpoints.

Plate 22. Socketed spearpoints with perforated tangs.

PLATE 21

1. 476/ 198 Schumacher coll. Carelton, Kewaunee Co.
2. 3024/ 273 Schumacher coll. Garden Bay, Delta Co., Michigan.
3. 3071 Duchateau coll. perhaps from Preble, Brown Co.
4. 489/198 Schumacher coll. Masonville, Delta Co., Michigan.

PLATE 22

1. 3615/ 269 Schumacher coll. Menominee, Menominee Co., Mich.
2. 4261/ 566 Schumacher coll. Oconto, Oconto Co.
3. 2131/ 421 Schumacher coll. Amberg, Marinette Co.
4. 4233/ 683 Schumacher coll. Marinette, Marinette Co.
5. 3494 C. D. Brower coll. no data on location.
6. 8201 Duchateau coll. Howard, Brown Co.
7. 3601/ 267 Schumacher coll. Howe, Oconto Co.
8. 4436/1236 Schumacher coll. Little Suamico, Oconto Co.
9. 3608/ 265 Schumacher coll. Ashwaubenon, Brown Co.
10. 475/ 198 Schumacher coll. Suamico, Brown Co.

PLATE 23

1. 751/ 212 Schumacher coll. east of Silas Lake, Oconto Co.
2. 4214/6548 collection? Necaton, Manitowoc Co.
3. 4371/1059 Schumacher coll. Farmington, Waupaca Co.
4. 4210/ 566 Schumacher coll. Suamico, Brown Co.
5. 4290/ 886 Schumacher coll. Gresham, Shawano Co.
6. 474/ 198 Schumacher coll. Westcott, Shawano Co.
7. 2147 Duchateau coll. perhaps from Suamico, Brown Co.

PLATE 24

1. 4345/1026 Schumacher coll. Menominee, Menominee Co., Mich.
2. 3671/ 331 Schumacher coll. Lena, Oconto Co.
3. 4344/1026 Schumacher coll. Menominee, Menominee Co., Mich.
4. 488/ 198 Schumacher coll. Masonville, Delta Co., Michigan.
5. 8827 Duchateau coll. no data on location.
6. 8826 Duchateau coll. no data on location.
7. 470/ 198 Schumacher coll. Maple Grove, Marinette Co.

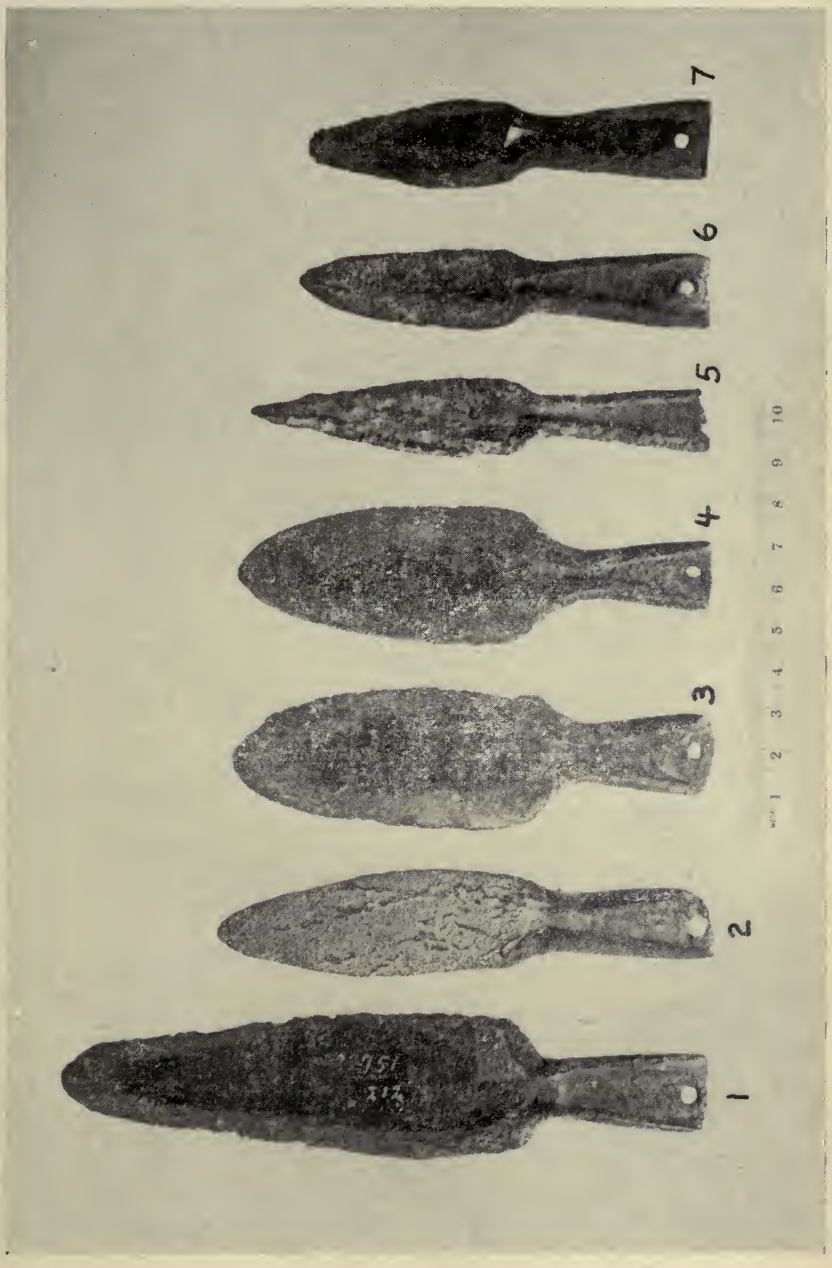

Plate 23. Socketed spearpoints with perforated tangs.

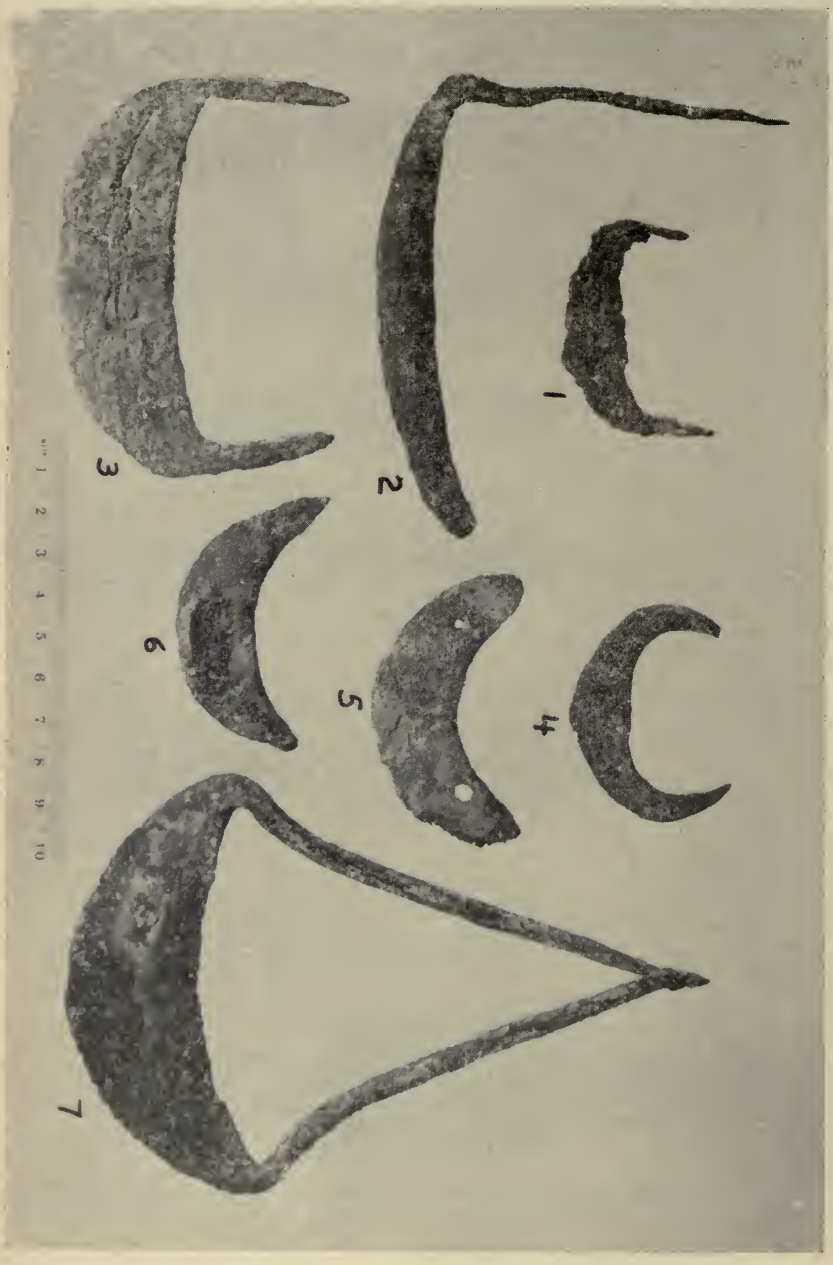

Plate 24. Crescentic knives.

Plate 25. Crescentic knives.

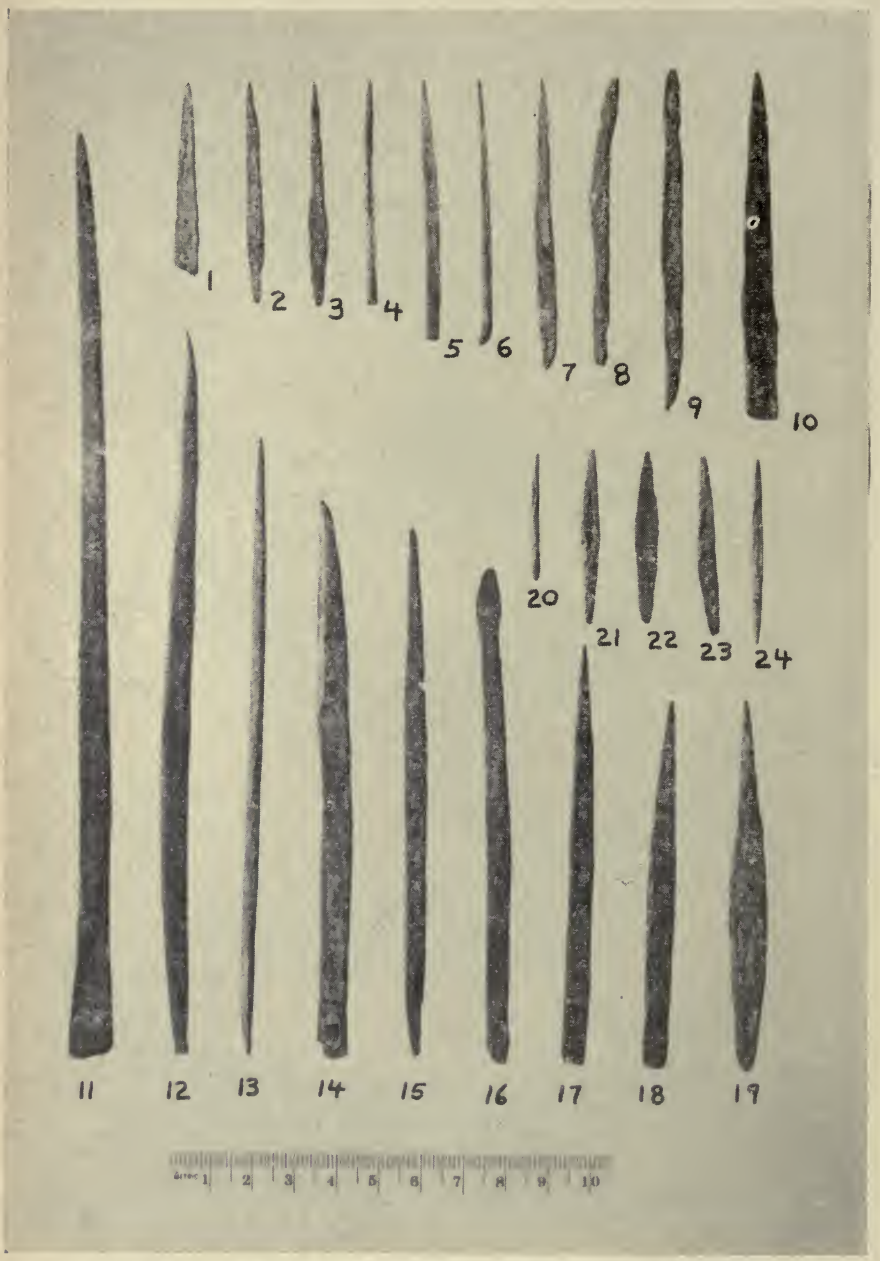

Plate 26. Awls and pins (some probably post-Archaic).

PLATE 25

1. 8825 Duchateau coll. no data on location.
2. 3668/ 330 Schumacher coll. Ellison Bay, Door Co.
3. 8824/ 82 Duchateau coll. no data on location.
4. 3669/ 329 Schumacher coll. Peshtigo, Marinette Co.
5. 3132 Duchateau coll. Rhinelander, Oneida Co.

PLATE 26

1. 729/ 212 Schumacher coll. Suring, Oconto Co.
2. 239/ 198 Schumacher coll. Scott, Brown Co.
3. 238/ 198 Schumacher coll. Scott, Brown Co.
4. 4347/1026 Schumacher coll. Menominee, Menominee Co., Mich.
5. 730/ 212 Schumacher coll. Lily Bay, Door Co.
6. 4350/1026 Schumacher coll. Menominee, Menominee Co., Mich.
7. 4389/1059 Schumacher coll. Mukwa, Waupaca Co.
8. 4357/1026 Schumacher coll. Menominee, Menominee Co., Mich.
9. 3678/ 237 Schumacher coll. Scott, Brown Co.
10. 3677/ 236 Schumacher coll. Scott, Brown Co.
11. 4266/ 683 Schumacher coll. Isabella, Delta Co., Michigan.
12. 4236/ 683 Schumacher coll. Belle Plaine, Shawano Co.
13. 4159/ 503 Schumacher coll. Little Suamico, Oconto Co.
14. 733/ 212 Schumacher coll. Little River, Oconto Co.
15. 4268/ 683 Schumacher coll. Sturgeon Bay, Door Co.
16. 481/ 198 Schumacher coll. Masonville, Delta Co., Michigan.
17. 3676/ 235 Schumacher coll. Scott, Brown Co.
18. 731/ 212 Schumacher coll. Cedar River, Menominee Co., Mich.
19. 4381/1059 Schumacher coll. Partridge Crop Lake, Waupaca Co.
20. no number no data on location.
21. 726/ 212 Schumacher coll. Little River, Oconto Co.
22. 725/ 212 Schumacher coll. Suamico, Brown Co.
23. 4278 collection? no data on location.
24. 723/ 212 Schumacher coll. Brazeau, Oconto Co.

PLATE 27

1. 2097 Duchateau coll. perhaps from Door County.
2. 4047/ 295 Schumacher coll. Ashwaubenon, Brown Co.
3. 720/ 212 Schumacher coll. Clay Banks, Door Co.
4. 294/4045 Schumacher coll. Menominee, Menominee Co., Mich. (Riverside Cemetery)

PLATE 28

1. 4273/ 683 Schumacher coll. Stephenson, Marinette Co.
2. 4461 Duchateau coll. Jacksonport, Door Co.
3. 4375/1059 Schumacher coll. Weyauwega, Waupaca Co.
4. 4046/ 293 Schumacher coll. Sevastapol, Door Co.
5. 719/ 212 Schumacher coll. Garden Bay, Michigan.
6. 4090/8823 Duchateau coll. no data on location.

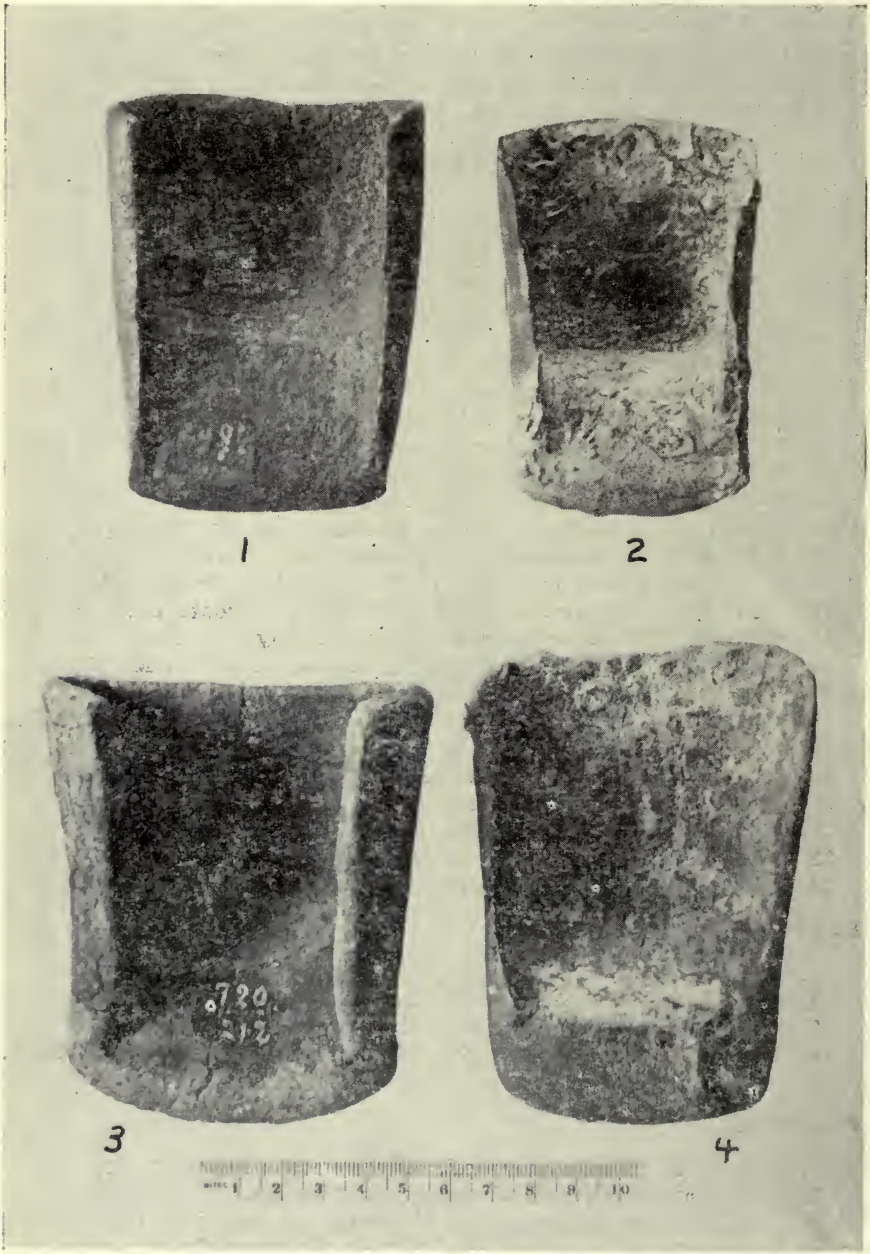

Plate 27. "Spuds" or hatchet heads.

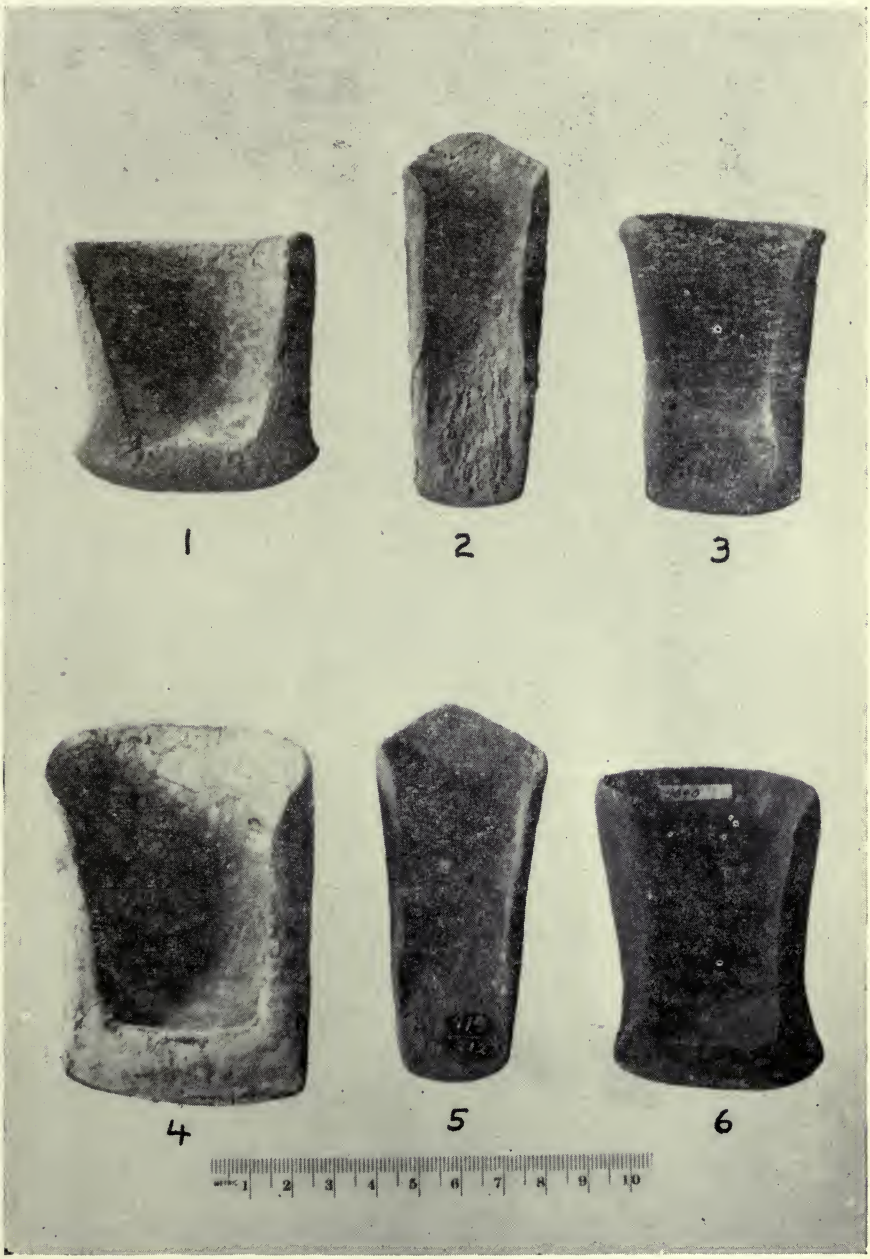

Plate 28. "Spuds" or hatchet heads.

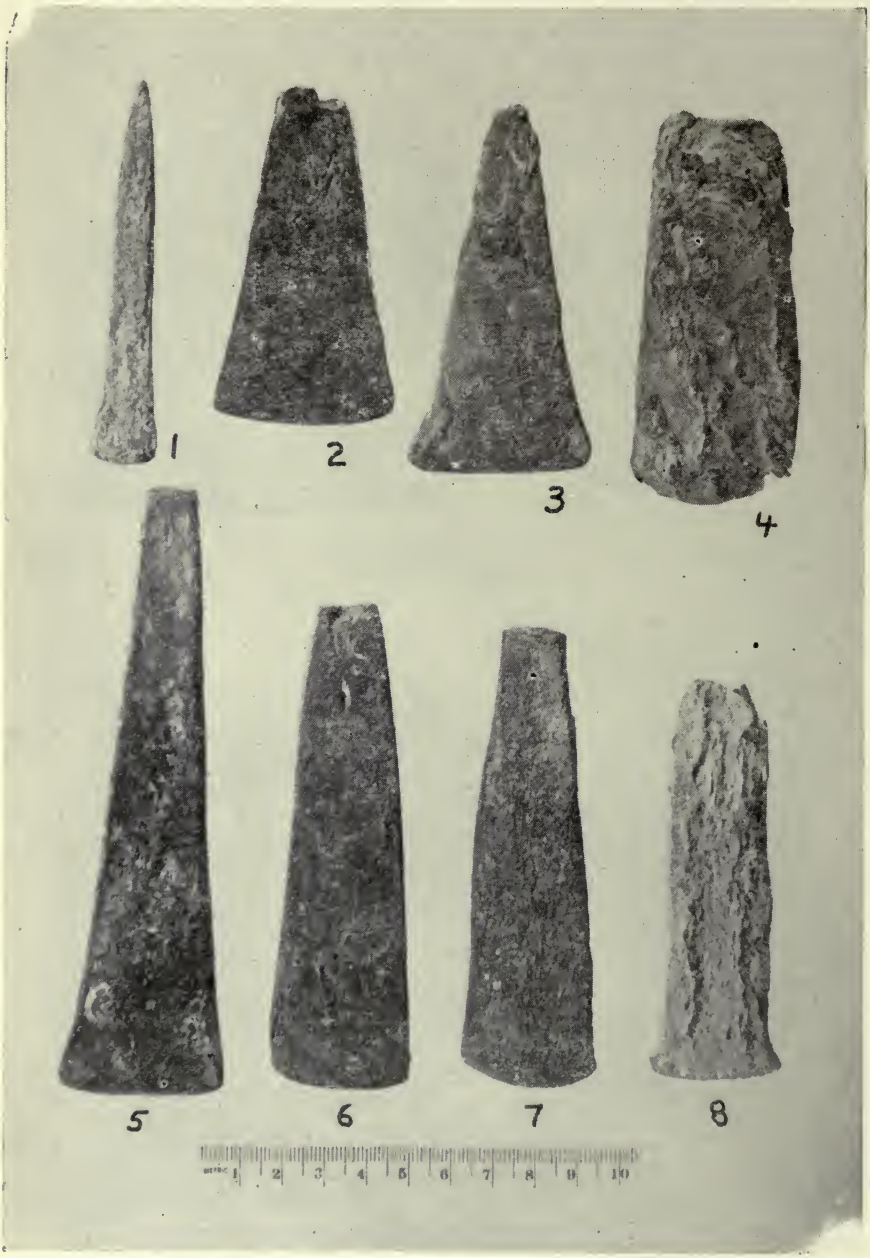

Plate 29. Celts (some probably post-Archaic).

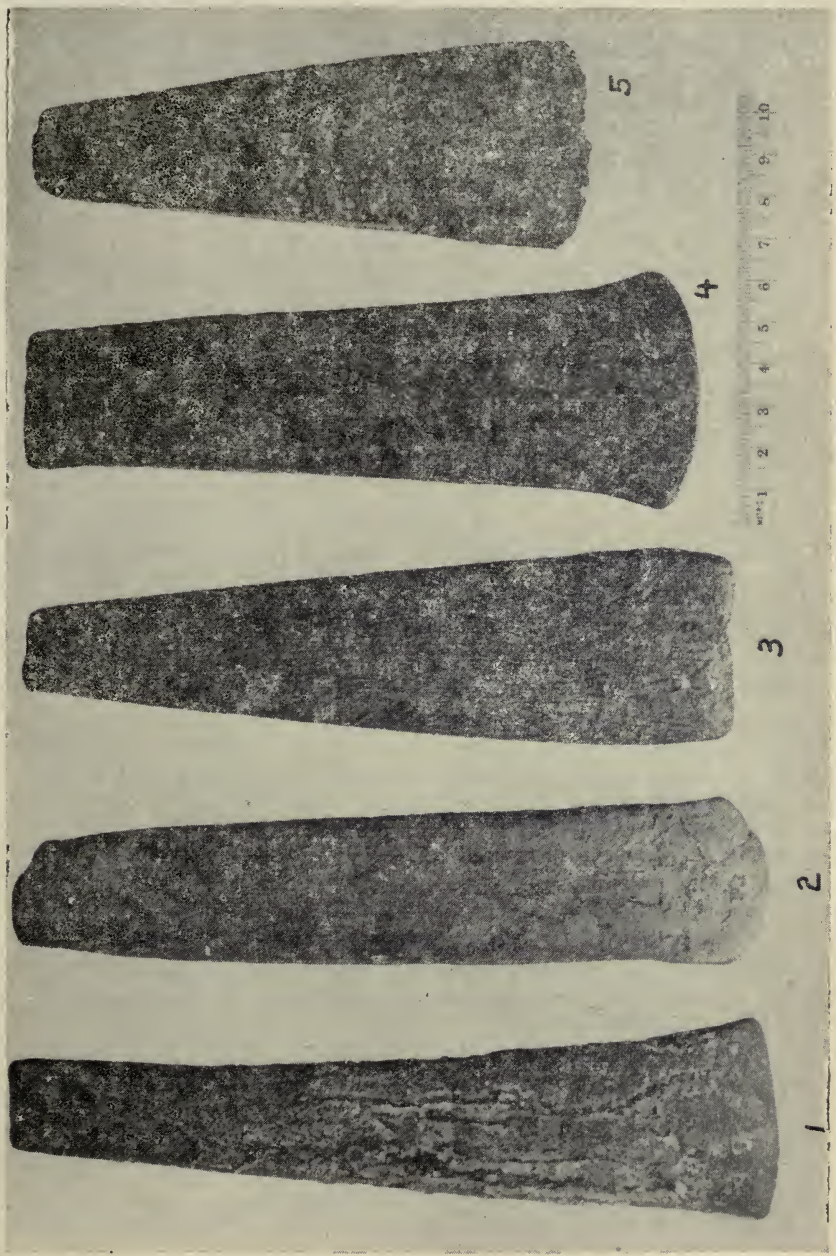

Plate 30. Celts (some probably post-Archaic).

PLATE 29

1. 4355/1026 Schumacher coll. no data on location.
2. 3168 Duchateau coll. in Fox Lake, Dodge Co.
3. 8828 Duchateau coll. no data on location.
4. 4058/ 297 Schumacher coll. Ashwaubenon, Brown Co.
5. 4059/ 301 Schumacher coll. Stiles, Oconto Co.
6. 4055/ 302 Schumacher coll. West Harbor, Washington Island, Door Co.
7. 4061/ 306 Schumacher coll. Stiles, Oconto Co.
8. 718/ 212 Schumacher coll. Underhill, Oconto Co.

PLATE 30

1. 4437/1236 Schumacher coll. Wagner, Marinette Co.
2. 4386 Duchateau coll. near Dagget, Michigan.
3. 472/ 198 Schumacher coll. Coleman, Marinette Co.
4. 4054/ 300 Schumacher coll. Mequon, Ozaukee Co.
5. 4501 Duchateau coll. Manistique, Schoolcraft Co., Michigan.

PLATE 31

1. 4692 Duchateau coll. probably from Suamico, Brown Co.
2. 3395 Duchateau coll. probably from Preble, Brown Co.
3. 4062/ 307 Schumacher coll. Ashwaubenon, Brown Co.
4. 4063/ 308 Schumacher coll. Green Bay, Brown Co.
5. 4057/ 310 Schumacher coll. Humboldt, Brown Co.
6. 4050/ 296 Schumacher coll. Howard, Brown Co.

PLATE 32

1. 3673 Schumacher coll. Ashwaubenon, Brown Co.
2. 4348/1026 Schumacher coll. Mole Lake, Forest Co.
3. 3641/ 231 Schumacher coll. Jacksonport, Door Co.
4. 3231 Duchateau coll. Beaver Dam, Dodge Co.
5. 3638/ 288 Schumacher coll. no data on location.
6. 735/ 212 Schumacher coll. Bradley, Lincoln Co.
7. 4548/1486 Schumacher coll. Escanaba, Delta Co., Michigan.
8. 4379/1059 Schumacher coll. Mukwa, Waupaca Co.
9. no number no information on location.
10. 3627/ 255 Schumacher coll. Green Bay, Brown Co.
11. 3626/ 224 Schumacher coll. Pensaukee, Oconto Co.
12. 3674/ 276 Schumacher coll. De Pere, Brown Co.

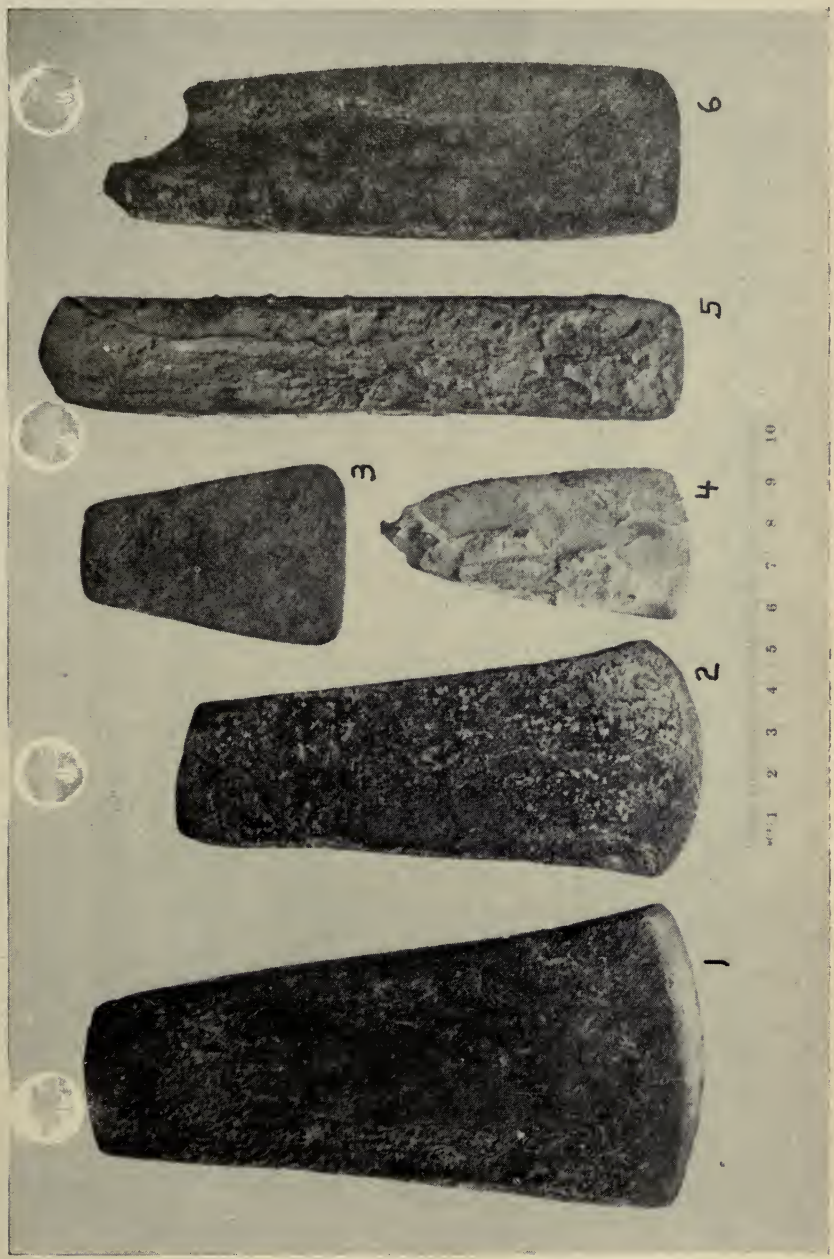

Plate 31. Celts (some probably post-Archaic).

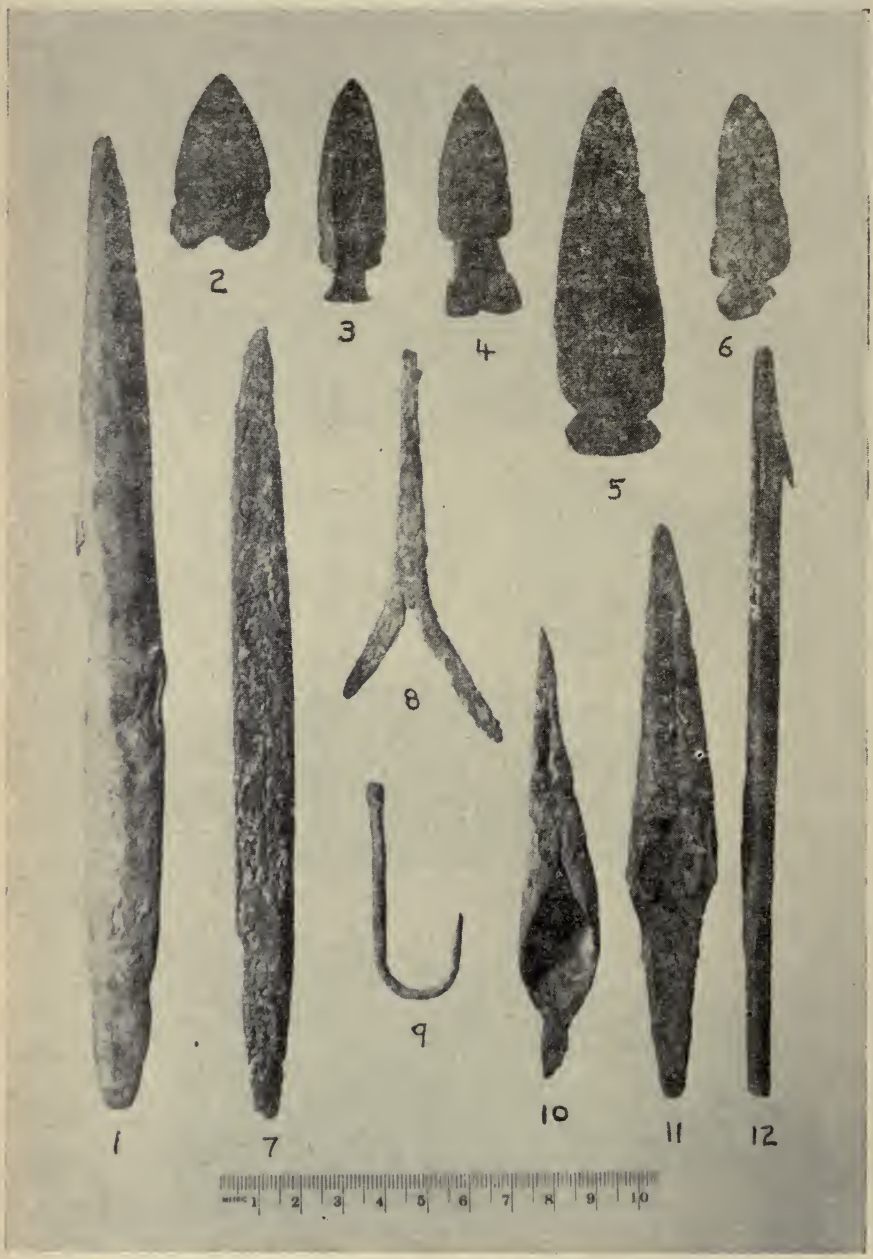

Plate 32. Miscellaneous copper tools. 1, 7: picks; 2-6, 10, 11: projectile points; 8: ?; 9: fishhook; 12: harpoon head (some probably post-Archaic).

TABLE 1. Descriptive information for socketed spearpoints. Weights are in ounces; all other measurements are in centimeters. Basal forms are described as straight (st), round (ro), or pointed (pt). The presence of a hole (h) or step (st) is indicated by an "X" in the appropriate column; the presence of a rudimentary or incipient step is indicated by an "x". Flange types (fl.) are identified in Fig. 1. Cross-sections have been arbitrarily split with a separate term for dorsal and ventral sections; the terms employed are flat, beveled (bev), rounded (ro), and triangular (tri).

	wt.	l.	base	h	st	socket diam.	max. width	fl.	x-section dorsal	x-section ventral
Pl. 15, 1	3.52	18.2	ro		X	1.4	3.3	1	flat	tri
Pl. 15, 2	3.0	17.2	pt		X	1.4	3.5	1	flat	tri
Pl. 15, 3	2.5	16.8	pt		X	1.2	2.9	1	ro	tri
Pl. 15, 4	2.5	15.1	pt		X	1.3	3.1	1	ro	ro
Pl. 16, 1	3.25	20.1	pt		x	1.1	2.6	1	flat	tri
Pl. 16, 2	2.5	19.5	pt			1.0	2.3	1	bev	tri
Pl. 16, 3	3.5	17.4	pt			1.1	3.3	1	bev.	tri
Pl. 16, 4	2.0	16.5	pt		x	1.2	2.2	1	flat	tri
Pl. 16, 5	2.75	15.7	pt			1.1	2.9	1	flat	tri
Pl. 17, 1	2.5	15.7	pt			1.3	2.4	1	bev	tri
Pl. 17, 2	1.75	14.9	pt			.8	2.3	1	flat	tri
Pl. 17, 3	3.0	14.6	pt			1.2	3.0	1	bev	tri
Pl. 17, 4	1.5	13.7	pt		X	1.0	2.1	1	flat	tri
Pl. 17, 5	1.0	13.2	pt			.9	1.8	1	flat	tri
Pl. 17, 6	1.25	9.3	pt			1.0	2.9	1	flat	tri
Pl. 17, 7	1.0	8.5	pt			1.1	2.0	1	flat	tri
Pl. 18, 1	4.25	26.2	pt			1.5	2.9	1	flat	tri
Pl. 18, 2	3.5	19.0	ro		x	1.5	2.7	1	tri	tri
Pl. 18, 3	2.75	17.9	ro			1.6	2.5	2	bev	bev
Pl. 18, 4	3.25	17.3	ro			1.4	2.8	1	flat	tri
Pl. 18, 5	3.5	17.2	ro			1.3	3.0	1	flat	tri
Pl. 19, 1	1.0	7.7	ro		x	1.3	2.1	2	bev	tri
Pl. 19, 2	0.5	9.4	pt			.9	1.2	1	bev	tri
Pl. 19, 3	1.75	10.2	ro		x	1.2	2.4	1	ro	tri
Pl. 19, 4	1.5	10.9	ro			1.1	2.3	1	flat	tri
Pt. 19, 5	1.25	11.1	ro			1.2	2.6	2	ro	ro
Pl. 19, 6	1.75	11.8	?	X	X	1.0	2.5	2	bev	bev
Pl. 19, 7	3.0	14.5	ro			1.2	3.0	1	bev.	tri
Pl. 19, 8	1.25	14.8	ro			1.1	2.0	1	flat	tri
Pl. 19, 9	1.5	13.8	ro?			.9	2.2	1	flat	tri
Pl. 19, 10	1.5	13.3	pt			1.0	2.3	1	flat	tri
Pl. 19, 11	2.0	13.1	ro			1.2	2.2	1	ro	tri
Pl. 19, 12	2.0	12.1	ro			1.5	2.4	2	flat	tri
Pl. 20, 1	1.0	7.2	st		X	1.0	2.3	2	ro	ro
Pl. 20, 2	1.25	8.6	ro		X	.9	2.9	4	bev	bev
Pl. 20, 3	1.25	10.5	?			1.0	2.1	2?	flat	tri
Pl. 20, 4	2.75	10.8	st		X	1.4	3.3	2	flat	ro
Pl. 20, 5	2.75	18.7	ro		X	1.3	2.2	1	ro	tri
Pl. 20, 6	4.25	17.5	st		X	1.3	3.2	1	flat	tri

Pl. 20, 7	1.75	17.2	st?			.9	2.0	2	ro	ro
Pl. 20, 8	2.25	16.1	st		x	1.1	2.6	2	ro	ro
Pl. 20, 9	2.5	11.2	st		x	1.4	3.3	2	ro	ro
Pl. 20, 10	1.25	11.1	st			1.0	2.4	1	flat	tri
Pl. 21, 1	5.0	21.6	st		X	2.6	3.7	2	flat	ro
Pl. 21, 2	7.25	20.4	st		X	2.7	4.2	2	tri	tri
Pl. 21, 3	4.5	18.5	st		X	2.3	3.6	2	bev	bev
Pl. 21, 4	4.0	16.9	st		X	2.1	3.0	2	bev	bev
Pl. 22, 1	1.0	8.1	st	X	X	1.2	1.9	4	ro	bev
Pl. 22, 2	1.25	9.0	st	X	X	1.3	2.5	2	bev	bev
Pl. 22, 3	1.0	10.2	st	X	X	1.3	2.0	2	ro?	ro?
Pl. 22, 4	1.75	10.3	st	X	X	1.7	2.7	2	ro	ro
Pl. 22, 5	2.0	11.6	st	X	X	1.7	2.8	2	ro	bev
Pl. 22, 6	3.0	19.5	ro	X	X	2.0	3.1	3	flat	flat
Pl. 22, 7	3.25	16.7	st	X	X	3.0	3.3	4	flat	flat
Pl. 22, 8	2.5	15.4	st	X	X	1.5	3.7	4	flat	flat
Pl. 22, 9	3.0	14.4	ro	X	X	1.6	3.2	2	bev	ro
Pl. 22, 10	1.75	13.3	ro	X	X	1.5	2.8	2	ro	ro
Pl. 23, 1	2.75	15.4	st	X	X	1.5	3.5	2	ro	ro
Pl. 23, 2	1.5	11.9	st	X	x	1.4	2.5	4	flat	flat
Pl. 23, 3	2.0	11.6	ro	X	X	1.5	3.3	4	ro	ro
Pl. 23, 4	2.25	11.3	st	X	x	1.3	3.3	4	bev	bev
Pl. 23, 5	1.0	11.0	ro	X	X	1.1	1.9	2	ro	ro
Pl. 23, 6	1.25	9.9	st	X	X	1.4	2.0	4	ro	ro
Pl. 23, 7	1.25	9.7	st	X	X	1.5	2.1	4	ro	ro
4242/683	3.75	18.5	pt		x	1.1	3.2	2	ro	tri
2205	3.75	21.0	st	?	X	2.3	3.2	2	ro	ro
4237/683	3.5	20.4	st			1.2	3.4	3	ro	tri
2142	2.75	16.0	?			1.2	3.2	2	tri	ro
5335/2718	2.25	16.9	st			.9	3.0	1	flat	tri
8640	2.0	14.7	?		X	?	2.6	?	ro	ro
3624/241	2.0	19.2	st			?	2.2	?	ro	ro
4163/503	2.0	12.2	ro	X		1.0	2.7	1	ro	tri
6070	2.0	13.9	ro	X	X	1.4	3.2	4	ro	flat
483/198	2.0	11.8	st	X	X	1.3	2.6	2	ro	ro
3606/264	2.25	15.6	ro			1.1	2.7	1	ro	tri
3604/270	1.5	10.3	st	X	X	.9	2.6	5	ro	bev
4417/3202	1.75	11.9	st		X	1.5	2.7	5	flat	flat
4369/1026	1.75	13.2	?	?	X	1.5	2.3	2	bev	bev
8633	1.75	11.4	st	X	X	1.4	3.0	4	ro	ro
3605/271	1.5	9.2	?		X	1.4	2.8	2	bev	bev
8643	1.75	13.2	?			1.1	2.4	2	ro	ro
3603/287	1.75	8.2	st			1.7	4.2	6	flat	ro
4380/1059	1.5	10.5	ro		X	1.5	2.4	2	ro	ro
3610/266	1.25	13.2	ro			1.1	2.5	1	ro	tri
4511	1.0	13.8	?			.5	2.6	5	ro	tri
4230/683	1.0	9.7	ro			.9	1.9	1	flat	tri
3617/280	1.25	11.6	ro	X	X	1.3	2.3	2	ro	ro
8536	1.0	12.2	ro			1.0	2.2	2	bev	tri
3653/275	1.0	12.6	?			.7	2.1	?	flat	tri
3396	1.0	10.7	st		X	?	2.2	?	ro	ro
349	1.0	9.9	ro	X	X	1.1	2.0	2	flat	bev

3611/286	1.25	10.1	ro		.9	2.4	1	bev	tri
4063	1.0	8.2	ro	x	1.3	1.8	4	bev	tri
4241/683	1.25	8.9	pt?		.9	2.2	1	ro	tri
4288/886	1.25	11.4	?		1.0	2.1	2	flat	tri
944/212	1.0	9.5		x	.8	1.8	1	flat	tri
8642	0.5	7.7	ro	x	.9	1.2	5	bev	bev
742/212	0.5	8.0	?		?	1.6	?	bev	bev
4164/551	0.75	8.3	pt		1.3	1.8	1	ro	tri
3651/282	0.75	8.9	st		.9	2.3	1	flat	tri
2001/222	1.0	8.1	ro		1.0	2.8	2	ro	ro
4387/1059	0.5	4.7	ro		.8	1.4	2	ro	ro

LOCATIONS OF SOCKETED SPEARPOINTS IDENTIFIED ABOVE BY CATALOGUE NUMBERS

4242/ 683	Schumacher coll. Sturgeon Bay, Door County.
2205	Duchateau coll. Iron Mountain, Dickinson Co., Michigan.
4237/ 683	Schumacher coll. no data on location.
2142	Duchateau coll. Suring, Oconto Co.
5335/2718	Frost coll. White Potato Lake, Marinette Co.
8640	Duchateau coll. Brown Co.
3624/ 241	Schumacher coll. no data on location.
4163/ 503	Schumacher coll. Angelica, Shawano Co.
6070	Duchateau coll. Rockland, Manitowoc Co.
483/ 198	Schumacher coll. Masonville, Delta Co., Michigan.
3606/ 264	Schumacher coll. Howard, Brown Co.
3604/ 270	Schumacher coll. Stiles, Oconto Co.
4417/3202	Crivitz coll. Stephenson, Marinette Co.
4369/1026	Schumacher coll. Mole Lake, Forest Co.
8633	Duchateau coll. no data on location.
3605/ 271	Schumacher coll. Armstrong, Oconto Co.
8643	Duchateau coll. no data on location.
3603/ 287	Schumacher coll. Ashwaubenon, Brown Co.
4380/1059	Schumacher coll. Iola, Waupaca Co.
3610/ 266	Schumacher coll. no data on location.
4511	Duchateau coll. no data on location.
4230/ 683	Schumacher coll. Stephenson, Marinette Co.
3617/ 280	Schumacher coll. Sault Ste. Marie, Canada.
8536	Duchateau coll. No data on location.
3653/ 275	Schumacher coll. No data on location.
3396	Duchateau coll. Cato, Manitowoc Co.
349	Duchateau coll. probably from Suamico, Brown Co.
3611/ 286	Schumacher coll. Allouez, Brown Co.
4063	Duchateau coll. Suamico, Brown Co.
4241/ 683	Schumacher coll. Little Suamico, Oconto Co.
4288/ 886	Schumacher coll. Vulcan, Dickinson Co., Michigan.
944/ 212	Schumacher coll. Stephenson, Marinette Co.
8642	Duchateau coll. no data on location.
742/ 212	Shumacher coll. Suamico, Brown Co.

4164/ 551	LaShay coll. Oregon, Oconto Co.
3651/ 282	Schumacher coll. Garden Bay, Delta Co., Michigan.
2001/ 222	Schumacher coll. Red Banks, Brown Co.
4387/1059	Schumacher coll. Mukwa, Waupaca Co.

NOTES

LOCAL HISTORICAL SOURCES IN ILLINOIS AND THEIR VALUE TO ANTHROPOLOGISTS

John P. Wilson
Museum of New Mexico

ABSTRACT

The usefulness of county histories and old settlers' reminiscences as anthropological source materials in Illinois is described, with particular emphasis on their value to archeologists and ethnohistorians. This type of literature has hitherto been largely neglected. The general nature of the contents in these volumes is sketched and indications given as to what gaps in knowledge they may help fill, what their limitations are, and possible means of checking on their accuracy.

Introduction

The county histories and old settlers' reminiscences of Illinois offer an important potential for research, beyond the local history level, to those concerned with the archeology of late historic Indian occupation of the state. Ethnohistorians have largely neglected this literature (i. e., Stout, Voegelin, and Blasingham n. d.; Temple 1958; Bauxar 1959), while limited use has been made of it by archeologists (Morse 1959; Wilson 1961) and by disciplines other than anthropology (Carlson 1951). Other sources, such as gazetteers and histories of the state in general, in addition to the well-known journals and reports of travelers, fur traders, Indian agents, and missionaries, also contain information of value. This review attempts to outline the usefulness to anthropologists of two types of publications; the **county histories,** and the **reminiscences** of the pioneer settlers of the state. The total of county history and reminiscence volumes may be as high as 500, the former far outnumbering the latter.

General Description of the Literature

This type of literature appeared from the late 1840's into the 1920's, relatively little being of more recent date. The most prolific period was ca. 1870 to 1920. These volumes could be classified in several ways, one being to separate reminiscenses from histories and group the latter by the names of their

authors and/or publishers. One merit of this approach lies in pointing out that the historical volumes fall into at least two recognizable cycles.

Prior to 1876, Illinois had a small, native historical literature, the product of individual authors who were little influenced by one another. The style, organization, and comprehensiveness of their works were highly variable. Aside from a certain amount of plagiarism, the nature of one volume provides no guide to what may be expected in another.

Subsequent to 1876 and extending into the 1880's, a rash of county histories appeared as a feature of this nation's centennial celebration. The great similarity in format and content shown by many volumes in this first cycle strongly suggests that they were written from an outline provided by some individual or organization. The most standardized portions dealt with the exploits of La Salle and other French explorers and colonists, the history of the state as a whole, and the **framework** utilized for the histories of the individual counties (i. e., a separate history of each township and of all institutions in the county, with special emphasis on the religious and biographical aspects). The authors, or contributors, were persons long resident in their counties, evidently selected for their superior educations, historical inclinations, and local prestige. Volumes on several different counties sometimes bore one publisher's imprint (Chas. C. Chapman & Co., H. F. Kett & Co.) and were perhaps sponsored by the publisher.

A second cycle of histories commenced about 1899 and continued until 1920 or thereabouts. This series was the products of Messrs. Newton Bateman and Paul Selby, working in conjunction with one or more local historians from each county. The senior author cannot have been responsible for much beyond the conception of this project, as he died about the time the first volume appeared. The HISTORICAL ENCYCLOPEDIA OF ILLINOIS portion, usually Volume I of a two-volume set for a county, was the same for all in this series except for the title page. The individual county histories, Volume II, varied considerably in organization and content. The local historians were evidently responsible for the second volume, and must have been allowed a great deal of discretion in what

they chose to include.

All counties of the state were probably represented in both cycles. One or more additional histories exists for most counties, giving an overall average of perhaps three per county. Most histories written independently of the two organized series were also published during the 1876 to 1920 period.

The historical reminiscence literature is much smaller and less susceptible to any classification scheme. Such volumes were produced at various places and times, mostly as local publications. Their contents, highly variable and quite obviously local products, contain few references to other publications or to events outside of the authors' experiences. The reminiscences appeared mainly in the last quarter of the 19th century. Examples would be Duis (1874), Matson (1872, 1874, 1878), and Ross (1899).

Contents of the Literature

The period covered by these sources extended from the inception of pioneer settlements to, in most instances, the publication date of the volumes. This usually meant a bottom date of 1810 to 1820 for information, sometimes as late as 1830. In a very few instances, as in Matson (1874), there appears to be some original data from the 18th century. "Traditional" history from the late 18th and early 19th centuries, preceding actual settlement, was sometimes included. The latter apparently derived from interviews with local Indians at some later date. Most Indians had been removed from the state by 1832 or by 1838 at the latest, hence the time depth for descriptions of the historic tribes is quite shallow.

These publications contain literally something for all anthropological interests, but are of greatest value to archeologists and to ethnohistorians concerned with the late historic Indian occupations. Without attempting to anticipate problems which others may formulate, the following types of information are most common:

A. Physical locations of villages and burial grounds, often with dates of occupancy, sizes, tribal affiliations, names of chiefs, etc.

B. Descriptions of these villages, the utilization of adjacent

or distant lands for agricultural and/or hunting purposes, foods, seasonal movements and rounds of activity, trail systems, ceremonies and other customs — especially dances, personalities of individual Indians, and much miscellaneous information of an anecdotal nature. For example, Bateman, Selby, Prince, and Burnham (1908: 636-639) give an extensive description of the composite of native religion and Christianity practiced by one band of Kickapoos.

C. Statements about the size and composition of aboriginal populations and data bearing on population shifts or replacements; tribal "boundaries" and the fluctuations of such boundaries.

D. Locations of archeological sites, reports of excavations, descriptions of artifacts.

Archeological and ethnohistorical interests are of course not mutually exclusive, for the ethnohistorian may be interested in documenting additional historic sites while the archeologist may wish to know the locations of historic Indian villages or burial grounds as well as to what tribe or other grouping these can be assigned. This writer has noted that the bulk of the ethnological information relates to the Pottawatomie. Lesser amounts will be found on the Kickapoo, Sauk, and Fox, with relatively little on the Winnebago, Delaware, Illinois Confederacy, Shawnee, and several other tribes.

Other related information includes some very explicit statements about the settlement patterns of the first settlers, locations and descriptions of forts built for protection from Indian attacks, and details on the nature, distribution, and abundance of native flora and fauna at the times of settlement. Among the latter are a surprising number of observations on and interest in buffalo bones, with attempts to find out when this species departed from the Illinois country.

One should not anticipate a wealth of information in any given book. Tremendous variations exist in both the quantity and quality of data from volume to volume meaning, essentially, from author to author. However, a great deal of anthropological interest and research was evident on the part of writers such as Matson (1874) and Beckwith (1879). With

nearly as many degrees of interest, scholarship, and literary talent as there were authors, the resultant corpus of highly localized data is anything but easy to digest and verify.

Evaluation

A preliminary evaluation of this literature will attempt to provide some rules of thumb for its use, point out gaps which it fills, and sketch its shortcomings.

An elementary rule is that the researcher should know something about the authors whose work he uses. Unfortunately, only a few generalizations can be offered on this important point. No professional historians, possibly excepting Bateman and Selby, appear to have been involved in the psoduction of either the histories or reminiscences; no budding Parkmans or Bancrofts. The diligence of a few knowledgeable individuals can only be admired, but by present standards even they were deficient in the organization and digestion of their materials.

Nearly all writers should be classed as local historians; people with a long residence in and detailed knowledge about one or several counties. Such persons were usually among the local literati; judges, ministers, lawyers, and newspapermen, as can be seen from the prefaces and introductions as well as their own biographies. Even the anonymous works published by some Chicago companies must have been the product of one or more local historians (as Matson in Kett 1877). In the case of the Bateman and Selby series, the talents of local and professional historians appear to have been combined. The possible significance of unacknowledged editors is an an unknown.

Descriptions and interpretations were often intermingled, especially where Indians and archeological findings were being discussed. The bases for these interpretations were inadequate even at the time they were written and are much more so today. The modern researcher should therefore be careful to distinguish between the two and, while not necessarily discarding the interpretations, make use of the descriptive data in the light of his own knowledge.

There is little question but what some of these works, with their location and descriptions of numerous Indian sites, are

valuable to the present-day archeologist. In a few instances the information is detailed enough for a tentative cultural assignment to be given to prehistoric remains. All pertinent histories and reminiscences should be consulted in connection with any archeological surveys or excavations, especially when of a salvage nature. The resultant increase in knowledge and possible saving of time spent in the field will more than offset the few hours spent in a library. The sources are also valuable for their descriptions of sites now wholly or partially obliterated. When used in conjunction with other source materials, such as original land survey notes, reports of the State Geological Survey, and articles in newspapers or the early Smithsonian Annual Reports, total knowledge about an area can be augmented and additional accounts of the same sites may be discovered, allowing the accuracy of descriptions to be cross-checked. In selecting sites for excavation, the archeologist may be led to more promising locations than those which his field surveys alone would indicate.

For the ethnohistorian or anthropologist with other interests, these volumes may be pertinent for nearly any problem involving historic Indians. One important aspect is the coverage provided of areas **away** from the main arteries of early 19th century travel; away from the large rivers, military forts, and trading establishments. In this respect, these sources supplement the journals left by missionaries, fur traders, military officers, and travelers, very few of whom appear to have ventured far from the larger rivers or the mission stations, trading posts, and forts along them. A large portion of the late historic Indian population does seem to have resided near the major rivers, but the latter areas as well as the "hinterlands" are covered in the histories. Inspection of even a few such works will show that many Indians lived in interior portions of almost all parts of the state.

The importance of the **critical** use of this literature can hardly be overstressed, the data being only as good as the competence of the authors. However, the value of applying the historical techniques of external criticism is often blunted by the lack of additional sources, other than more histories of the same or nearby counties. This situation necessitates evaluating

each volume by internal criticism as well, as a basis for judgments on how well the data fit into the developing pattern of whatever a particular line of research may be. As a general rule, the authors of these volumes compiled more specific information about their own areas than anyone who has written about them since, so it behooves the modern researcher to use their materials with an open mind and with the awareness that his own pre-conceived opinions may be in error.

As an additional caution, most of the specific data on historic Indians was undoubtedly written from memory, without reference to notes and perhaps with minor reliance on documentary sources. Materials drawn from broader histories and represented as pertaining to a particular area were usually acknowledged or are self-evident. This situation of writing long after the fact, so to speak, is probably not such a problem with the archeological descriptions.

While independent checking may be easier said than done, due to plagiarism as well as a paucity of other resources, some of the contemporary types of documentation which the archeologist might consult have been indicated above. For the ethnohistorian, the importance of evaluating each volume by internal criticism, if other sources should be lacking, is even more important.

BIBLIOGRAPHY

Bateman, Newton Paul Selby, Ezra M. Prince, and John H. Burnham (eds.)

1908 HISTORICAL ENCYCLOPEDIA OF ILLINOIS AND HISTORY OF McCLEAN COUNTY. Chicago: Munsell Publishing Company.

Bauxar, J. Joe

1959 **The Historic Period,** in Bluhm, ed. ILLINOIS ARCHAEOLOGY. Illinois Archaeological Survey, Bulletin No. 1, pp. 40-58. Urbana.

Beckwith, Hiram W.

1879 HISTORY OF VERMILION COUNTY, Together with Historic Notes on the Northwest, Gleaned from Early Authors, Old Maps and Manuscripts, Private and Official Correspondence, and Other Authentic, Though, For the Most Part, Out-of-the-Way Sources. Chicago: H. H. Hill and Company, Publishers.

Carlson, Theodore L.
1951 THE ILLINOIS MILITARY TRACT. Illinois Studies in the Social Sciences, Vol. 32, No. 2. Urbana; University of Illinois Press. x

Duis, E.
1874 THE GOOD OLD TIMES IN McLEAN COUNTY, ILLINOIS. CONTAINING TWO HUNDRED AND SIXTY-ONE SKETCHES OF OLD SETTLERS. Bloomington: The Leader Publishing and Printing House.

Kett, H. F. & Co.
1877 THE VOTERS AND TAX-PAYERS OF BUREAU COUNTY, ILLINOIS. Chicago.

Matson, Nehemiah
1872 REMINISCENCES OF BUREAU COUNTY IN TWO PARTS, WITH ILLUSTRATIONS. Princeton: Republican Book and Job Office.
1874 FRENCH AND INDIANS OF ILLINOIS RIVER. Princeton: Republican Job Printing Establishment.
1878 MEMORIES OF SHAUBENA: WITH INCIDENTS RELATING TO THE EARLY SETTLEMENT OF THE WEST. Chicago: D. B. Cooke & Co.

Morse, Dan F.
1959 **Preliminary Report on a Red Ochre Mound at the Morse Site, Fulton County, Illinois.** PAPERS OF THE MICHIGAN ACADEMY OF SCIENCE, ARTS AND LETTERS, Vol. 44, pp. 193-207. Ann Arbor.

Ross, Harvey Lee
1899 THE EARLY PIONEERS AND PIONEER EVENTS OF THE STATE OF ILLINOIS. Chicago: Eastman Brothers.

Stout, David B.; E. W. Voegelin, and E. J. Blasingham
n. d. AN ANTHROPOLOGICAL REPORT ON THE INDIAN OCCUPANCY OF THE ROYCE AREA 50 WHICH WAS CEDED TO THE UNITED STATES BY THE UNITED TRIBES OF SAC AND FOX INDIANS UNDER THE TREATY OF NOV. 3, 1804. Before the Indian Claims Commission, Docket No. 83.

Temple, Wayne C.
1958 INDIAN VILLAGES OF THE ILLINOIS COUNTRY. Illinois State Museum, Scientific Papers, Vol. 2, Part 2, Springfield.

Wilson, John P.
1961 AN ARCHEOLOGICAL SURVEY OF THE UPPER CENTRAL SPOON RIVER DRAINAGE, ILLINOIS. Master's Thesis, Department of Anthropology, University of Illinois. Urbana.

A CHIPPEWA FUNERAL

Vivian J. Rohrl

Among many southwestern Chippewa Indians, few of the traditional customs are in evidence. At Mille Lacs Lake, where I did field work in the Fall and Winter of 1963-64,[1] I was invited to a funeral. A description of the funeral, as well as of general mortuary practices at Mille Lacs, follows.

As soon as possible after the death, the body of the deceased was taken to its original home. Members of his Drum Society [2] were assigned to dress the man in working pants, buckskin jacket, visored cap, and moccasins. The moccasins are especially essential, nobody being buried without them. As soon as possible, all those who knew the deceased are invited to the funeral. Invitations are delivered in person by the **oshkabewis,** or official inviter of the group. The inviter may consult with others, particularly the older men members of the Drum Society of the deceased, to make sure that all the people who knew the deceased are included.

When all the people are assembled and the body dressed properly, the body is placed on a long board. The bed and possessions of the deceased are placed outside the home, for later distribution. The clothing is tied in a bundle. The doorway of the home is cleared in order that the soul of the deceased may have free passage.

The immediate family sits on a mat on the floor, and the head of the Grand Medicine Society begins his preaching. He tells the deceased of his coming four-day journey to the place where the sun rises, of his encounters with spirits on the way. He instructs the deceased on how he will behave. The immediate family still sitting on the mat and with other reltives and acquaintances lining the walls or sitting and standing outside, the last meal with the deceased takes place. During the entire ceremony the body is covered with tar paper. Food in the old Indian style is distributed by those who contributed and cooked it, usually close female relatives (either consanguineal or affinal). In this particular case, the meal consisted of venison and wild rice. Other local foods, such as dried blueberries or maple sugar, may also be used.

The meal is placed in a lunchbag next to the deceased. [3] Others are served in plates. The women who distributed the plates later collect them, and the ceremony resumes. [4]

The people are exhorted to follow the old ways and to remember them. In this particular case, the man who preached was substituting for the head of the Grand Medicine Society, the latter being ill in a sanatorium at the time. The preacher spoke of the old days when there were only Indians in the village, and no whites. He reminds the people of the good life the Indians had and should continue to have.

This part of the ceremony is standard. However, the speaker of that day added another comment, reminding the people of how they had killed off all the whites at one time. [5]

The speaker than takes a tin can with stones in it and shakes it, making a very loud rattling noise. This is to help usher out the spirit to the first part of its journey. The speaker chants a traditional chant, with variations to suit the circumstances of the deceased. In this case, he said: "Now you are leaving your loved ones, you are leaving your wife, and you are leaving your sons. Do not look behind you at them, they will join you later." Then the can is shaken again. It is believed that at this point the spirit goes out the doorway of the home.

Now the body is uncovered, and all those who knew him must line up and come and pay his respects to the dead man. The relatives and friends, one at a time, stand near the body, within two feet of the head. Close relatives kiss him. Others may touch his face with the hand. All look at him wordlessly. Then they move on and comfort the members of the immediate family.

No show of grief is permitted. Those who look as if they are about to cry are immediately given water to drink. Such persons may be told, by the preacher, "Don't (giego). Don't do that to the dead man's spirit." It is believed that tears weight the spirit down, impeding his journey. During the entire ceremony, those who are not immediately participating may chat. They also joke and laugh with one another quite frequently.

After this part of the ceremony is completed, the body is put in a coffin and carried out. An undertaker appears, who asks a number of required questions, usually answered with difficulty, about the deceased; he then withdraws to his car.

The cortege proceeds to the graveyard with lights on the cars. Four men place the coffin into a rough box of unfinished planks, and into a hole prepared by two other men. The undertaker then asks, "Is that all?", is told "Yes," and goes away.

The coffin is then covered with a large sheet of tarpaper (in the old days the material used was birch bark), and the four men cover it with earth. The preacher than stands at the head of the grave, and says, "Now your spirit will go and join the other spirits. Do not look back, do not look back at the body you have left behind."

The people then disperse and go home. Within two days, designated people (in this case, the man's Drum Society) are invited officially and assemble for distribution of the dead man's possessions. The close relatives may not take any of his clothing. However, they appear and are frequently given gifts of clothing from others. The members of the Drum may also paint the family's cheeks red in order that they do not appear to grieve any longer.

In a few days, the grave may be covered, either with tar paper or with a plank hut ("spirit house") in the shape of a miniature log cabin, with a hole facing eastward.

NOTES

1 This project was made possible by funds of the National Institute of Mental Health via the Department of Anthropology at the University of Minnesota, and by a grant from the San Diego State College Foundation.

2 There are six Drum Societies at Mille Lacs Lake, each of which holds at least four dances annually.

3 An informant from Red Lake reservation tells me that at Red Lake the meal of the deceased is placed in a dish, and not in a paper lunchbag. At Mille Lacs Lake before the ceremony, a possession of the deceased is placed in the hand to accompany the spirit on its journey. In this case, at Mille Lacs, the hammer of the deceased, the last tool he had used, was in his hand.

4 At this point, in all Mille Lacs funeral ceremonies, the preacher is informed as to whether the spirit will go the white way or the Indian way. The remainder of the ceremony here described is that of a traditionally oriented man who went the Indian way. In case the spirit goes the white way, a Christian priest is called in at this point.

5 A lady commented on this addition, saying to the writer, "that man is saying what John Mink (the head of the Grand Medicine Society) would not say. Not at a funeral. That's okay for a baby's funeral or a Christian funeral, but not for a good old man like that. This was a really old man. They should not say this at the funeral."

NOTES

THE BOOKSHELF

By

David A. Baerreis

and

Guest Reviewers

Last year saw the initiation of a new publication series, PUBLICATIONS IN SALVAGE ARCHAEOLOGY, issued by the Smithsonian Institution, River Basin Surveys, with Warren W. Caldwell as editor. Until this time, results of investigations carried out under the Inter-Agency Archeological Salvage Program had been primarily reported in the **River Basin Survey Papers** published as **Bulletins** of the Bureau of American Ethnology. Since this latter series is being brought to a close, new publication outlets are obviously needed. To date, three numbers in this new series have been issued, dealing with archaeological sites in South and North Dakota. The reports are bound in paper covers and reproduced by photo-offset. The illustrations are abundant and generally sharp and the text, maps and diagrams are clear and readable. While these reports deal with areas that are somewhat distant from Wisconsin, brief mention will be made of their content in the interest of those concerned with problems of broad areal connections or who wish a guide to new publications in the Plains area.

The first number in the series is "The Fire Heart Creek Site" by Donald J. Lehmer (PUBLICATIONS IN SALVAGE ARCHEOLOGY No. 1, v + 115 pages; Lincoln, 1966). The Fire Heart creek site, excavated in 1964, is on the Missouri River in the Standing Rock Indian Reservation about nine miles north of Fort Yates, North Dakota. The presence of two distinct house types, long, rectangular and circular, indicated clearly the existence of two periods of occupation at the site and stratigraphy established the circular houses as being later in time. The earlier component is assigned by

Lehmer to the Fort Yates phase, the earliest village complex to become established in this sector of the Missouri Valley around A. D. 1100 and persisting, he suggests, until the latter part of the 15th century. A single radiocarbon date was obtained from timbers on the floor of one of the three houses excavated (SI-213 – A. D. 1230 + – 80). This early component is viewed as a permanent village, occupied throughout most of the year, and the material culture recovered reflects the full range of activities carried on by other village tribes of the area. By contrast, the late component is dated as from the early part of the 19th century on the basis of trade goods and enthnohistorical data suggesting this was an Arikara camp visited by Lewis and Clark in 1804. The late component, with its circular lodges (seven were excavated) is interpreted as being a hunting camp occupied for only a limited part of the year. Its artifact assemblage lacks a number of items, such as scapula hoes, ordinarily found in more permanent villages.

A particularly interesting change is revealed by shifting proportions of animal bone in the two components. In the early component, of 407 identified bones 67.6% was bison while 18.2% was deer or antelope. In the late component, of 574 identified bones 36.2% was bison while 52.3% was deer or antelope. It is to be regretted that a more precise differentiation between deer and antelope could not be accomplished since these changes in proportion are suggestive of environmental shifts as well as an economic change.

The second number in the series is "The Black Partizan Site" by Warren W. Caldwell (PUBLICATIONS IN SALVAGE ARCHEOLOGY No. 2, iii + 145 pages; Lincoln, 1966). Located on the Missouri River in Lyman County, Central South Dakota (about five miles north of Lower Brule, excavations in 1956, 1957 and 1958 revealed the presence of circular earth lodges surrounded by a stockade and ditch. Like many other sites in this region, it is viewed as having two occupations. The early village is proposed as having been built in the middle years of the 15th century. After a period of abandonment the site was reoccupied in the 17th and 18th centuries. The early component has much in common with such sites as Arzberger and hence reflecting influence (or

population movement) from the Central Plains region. Despite the gap in time, the reoccupation of the site was by peoples who continued the development of the same tradition. Animal bones identified in an appendix essentially comprise a list of species present, reminiscent of the inadequate procedures of many earlier Smithsonian reports, though a few general statements of relative frequencies are given. Since few of these sites will ever be restudied, it is regretable that more information on such non-artifactual remains is not given.

The third number in the series is "The Hitchell Site" by Richard B. Johnston (PUBLICATIONS IN SALVAGE ARCHEOLOGY, No. 3, v + 113 pages; Lincoln, 1967). The site is also on the Missouri River and located in Charles Mix County some 40 miles upriver from the Nebraska - South Dakota border. The site is one which, through the high proportion of woodland pottery, may be of greatest interest to our area. It was excavated in 1951 and 1952 by a staff which did not include the author of the present report. Johnston has tackled a difficult problem in attempting to analyze a collection from a complex site where further excavations and stricter provenience control would doubtless have resolved many of the debatable points. A late component is assigned to the Fort Thompson Focus, dating roughly in the early 18th century. The bulk of the discussion, however, revolves around Woodland and Great Oasis ceramic materials, dating perhaps a thousand years earlier and involving the question of whether these comprise one or more distinct occupations. The question will perhaps have to be resolved by work at additional sites.

All three reports add substantially to the corpus of data that will permit refinements in our syntheses of Plains prehistory and Plains relations with other areas. The speedy reporting of Dr. Lehmer's work is particularly to be commended. The lag in reporting the other sites, and one must assume there are many additional ones, suggests that the lessons to be learned from earlier salvage work in the 1930's and 1940's are not yet fully appreciated.

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NOTES

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THE RIVERSIDE SITE: A LATE ARCHAIC MANIFESTATION IN MICHIGAN

Robert Hruska

The Riverside site was first excavated by the University of Michigan under the direction of Dr. Albert C. Spaulding with Phoenix Project Funds.

The latter portion of the 1956 and the entire 1957 seasons were devoted to mapping and a general sampling of the entire area. At this time the site limits were determined and the burial area discovered. These burials produced socketed

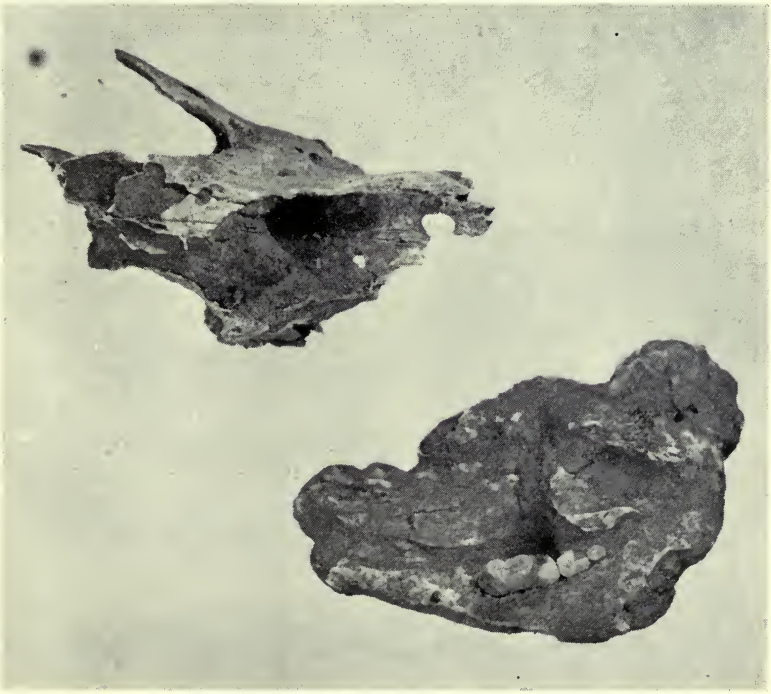


FIGURE 1 — DOG SKULLS
University of Michigan Photo Negative Number 7879

FIGURE 2 — SCRAPERS
University of Michigan Photo Negative Number 7884

FIGURE 3 — CARIBOU ANTLER TOOL
University of Michigan Photo Negative Number 7889

copper tools in direct association with stone and bone artifacts (Fig. 1 to 7). Also found was the first obsidian reported for the area. A carbon 14 date of 1,000 B. C. was obtained using bone as a test sample. Then, after a lapse of four years, the Oshkosh Public Museum with the assistance of the Milwaukee Public Museum, commenced work on the site.

It was through the complete cooperation of the Menominee Cemetery Board and Mayor John Reindl that the excavation was made possible. The author takes this opportunity, on behalf of himself and the officials of the Oshkosh Public Museum, to acknowledge with gratitude the many services rendered to the expedition by friends and co-workers. Acknowledgements are likewise due to the citizens of Menominee, Michigan, and Marinette, Wisconsin, and especially to the Crescent Tool Company of Marinette, which gave financial assistance during the first year when it was desperately

FIGURE 4 — COPPER POINTS
University of Michigan Photo Negative Number 7880

FIGURE 5 — COPPER POINTS
University of Michigan Photo **Negative Number 7887**

FIGURE 6 — BEAVER TEETH
University of Michigan Photo **Negative Number 7886**

needed. Special thanks are also due to the members of the Wisconsin Archeological Society who provided labor, equipment, and other services too numerous to mention.

The 1961 season work was financed by the Oshkosh Public Museum, the Milwaukee Public Museum, and private individuals. Much of the field work was performed by Wisconsin Archaeological Society members on a voluntary basis. The 1962 and 1963 field seasons were financed by the National Science Foundation under Grant G23971. Without this help the excavation could not have been continued. The writer also wishes to express his appreciation to Dr. Robert Ritzenthaler of the Milwaukee Public Museum who served as the

FIGURE 7 — SHARPENING STONE
University of Michigan Photo Negative Number 7885

N. S. F. Principal Investigator and aided in the preparation of the manuscript for publishing.

SITE DESCRIPTION

The location of the Riverside Site is Government Lot 1, Section 5, Township 31N, Range 21W, Menominee County, Michigan. Its average elevation is 621' above sea level and it is located in a tract of land directly south of the present-day Riverside Cemetery, inside the city limits of Menominee, Michigan. The land now belongs to the Riverside Cemetery and will be used in the future for the expansion of the same.

The entire area is covered with low, sandy hills and ridges. The sod cover is quite thin and covers the entire site with the exception of a small sand pit where fill has been removed over a period of many years.

Before the excavation was begun, the site had been covered with very large second growth timber, and had never been plowed or disturbed by the local inhabitants. The burials themselves were situated in a high, stabilized sand dune overlooking the Menominee River. Of this sand dune about 25-30% had been removed and used for fill in the making of a dam on the river prior to 1900. The site first came to the attention of archaeologists when sand was removed for cemetery fill, many times exposing copper artifacts and fragments of human bone.

The area has been thought to be an Indian burial ground for many years because of the large number of artifacts collected by local residents. But, because of the lack of cataloging, very few pieces in these local collections can be definitely attributed to the Riverside Site.

The area investigated is in the form of a point extending into the Menominee River. At one time before the river was dammed, a rapids had existed at the southernmost shore. During the time of dam construction, the southeastern portion of the site was leveled by horsedrawn buckets, destroying the southern end of the highest elevation within the area. The remaining ridges have a tendency to run north and south. Along side the river a dirt road encircles the site which has been shifted on numerous occasions, leaving old ruts visible

in a number of places. Collecting on the site has been restricted to areas such as were opened by fill removal and road wear. Since about 1945 the author has surface collected the site and catalogued several hundred artifacts, both stone and copper.

The site consisted of burial pits between which large amounts of village material were located, representing a variety of cultures. The pits were oval in shape and usually about 2' - 3' wide with sloping sides extending to a depth of 30".

The single or multiple burials were flexed, bundled, or cremated, sometimes with more than one type in a single pit. Red ocher was present in almost every case. Grave goods were quite common and consisted of copper beads, points, crescents, and awls, sometimes associated with large hornstone blades and/or stemmed points. On occasion the presence of large amounts of copper had preserved fabric, bark, and wooden tool handles. In the three years of excavation, 52 burial pits were discovered, producing a minimum of 63 individuals. Refuse pits were also excavated, but little material was recovered from them.

Excavation Techniques

The excavation techniques used on the site were as follows. Directly south of Dr. Spaulding's 1957 excavation a 5' x 20' test area was started and labeled Area No. 1. This was done to determine the amount of unauthorized digging that had taken place after Dr. Spaulding left and before the bulldozer arrived to fill his excavations. Fortunately such digging was not as extensive as expected and was completely encompassed in the 5' x 20' area. This area was carefully shaved down with sharpened shovels and all material was put through a ¼" sifter. Everything was saved, with the exception of firecracked and unaltered stones. Then the area immedately to the south was worked in 5' x 5' numbered units. After working south until no features and very little village material were being recovered, new excavations were started. These were to the north of Spaulding's 1957 excavations, and to the east and the west of Area No. 1, the northern unit starting at the edge of an existing sand pit and ending at the northern side of Dr. Spaulding's excavation. The eastern and western extensions continued until no further

features were discovered and village material was too sparse to make further work practical. By this method, the entire high area was completely excavated, and it assumed that features in this area are now completely exhausted.

Numerous 5' x 10' test pits were dug throughout the remainder of the village area. No stratification of materials could be found in any of these pits. Material was bagged according to 6" levels, starting from the surface. In several instances, what seemed to be red ocher and dark organic material were discovered from 3' - 4' beneath the present surface. In every instance, however, these would disappar at a depth of about 6". In no case were human remains or arifacts found in these areas. It was noticed that these areas, after standing overnight, would suddenly fill with water. At a later date, it was determined that these discolorations were caused by small springs or ground water being forced to the surface in these areas. All test pits produced varied amounts of artifacts and refuse, with the majority of the material recovered falling into the flint chip, broken artifact, or potsherd categories. Each square was carefully shaved with a shovel until a disturbance or pit outline was recognized. Once again, all the material was put through a ¼" mesh sifter. As pit outlines were discovered, it was determined if additional squares would be removed for the full exposure of the features. All features were troweled and checked periodically with a metal detector. Material from the square was bagged as such, and any unusual or diagnostic pieces were labeled as to depth. No signs of stratigraphy were evident in the burial area. However, village midden did seem to occur within the first 18" after the subsod layer was exposed. The depth of this sod layer varied considerably from one part of the site to another. Any material definitely within the pit outline was labeled as such and the pits were assigned feature numbers. Through the use of acrylic lacquer, it was possible to preserve intact many portions of bone that would otherwise have been impossible to save. It was found that the bone material, which was damp while in the soil, tended to flake and break down as it dried. For this reason, bone material was carefully watched after exposure, and as the moisture left it, it was replaced with acrylic lacquer. This was a time-consuming

job and many times would take several days, but the time was justified by the results obtained. In many cases where tooth enamel was discovered, small blocks of sand containing the teeth were hardened and removed as a unit. In almost every case at least some portions of each feature were preserved in this manner. When material was saved for the possibility of carbon 14 dating, it was dried in the shade before being either packed into glass jars or wrapped in aluminum foil to prevent the occurrence of mold. No preservatives were allowed in the immediate area. Work progressed along a line from east to west of approximately 20' in width, with the squares being assigned consecutive numbers. (The entire site is composed of sand, with the exception of a very slight sod covering at the present level, a subsod level, approximately 3" - 4" thick, appears at depths varying from 3" - 30".) This type of material is very treacherous in which to work, for after several days without rain, pit walls would slump with no warning whatsoever. It was found through experience, however, that when the sand was damp, such as after a rain, it was much easier to work and disturbances show up better. The dampness seems to cement the sand in place. Critical areas, such as those around the features and suspected pit outlines, were kept constantly damp with a pressure-type water sprayer.

As work progressed, back fill became a problem. The piles of sand which had been previously removed from the pit, sifted, and shoveled back, tended to dry rather rapidly and sift back into the excavation. At this time, a tractor was brought to use. Because of the nature of the site, it was impossible to get the tractor to the sand hill. Attempts to do so met with failure when the tractor settled down into the sand becoming inoperable. It was found that by using 100' of heavy rope and a scraper, it was possible to keep the tractor off the hill and on firm footings, enabling it to pull the sand piles back so they would no longer be a problem. This technique saved many hours of tedious work, and also, speeded operations a great deal.

Certain of the features required around - the - clock care while drying. At this time a very large bottle-gas flood light was used. This again tended to speed up operations and pro-

duced very satisfactory results. The 1/4" mesh screen sifters used were of the table-type with four legs, the sifter box traveling on ball-bearing rollers. These proved especially helpful because they would stand by themselves and one man could first shovel the dirt into the sifter and then shake it through. In this was, on occasion, crew members working alone could process the material very efficiently. In all photographs either a palette knife or a trowel has been included, pointing north. The site, being located within the city limits of Menominee, Michigan, attracted very many visitors — as many as 100 per day. For this reason it was necessary to erect snow fences to exclude people from the actual digging areas. However, as digging progressed, the fences were moved in such a way that spectators could have a clear view of the project. By doing this we were able to keep the actual digging area clear of spectators and still enable visitors to have a good view. The entire crew was housed on the site

FIGURE 8 — FEATURE 1 — AREA 1
Shows Limits of 1957 Excavation

in a series of tents and the site was occupied continuously from the first of June until school started. For this reason, we had no trouble with unauthorized persons entering the digging area after the day's work had finished. Also, it was not necessary to cover the features at night.

Feature Descriptions

FEATURE 1 – REFUSE PIT

This feature occurred in Area No. 1. It started to show up as a very dark pit at a depth of approximately 13". At 19" the bottom of the pit was established, and it was found to be 22" in diameter. No bone, very little ocher, and only a few flakes of flint and one potsherd were found in this pit. For this reason, it is labeled as being a refuse pit, rather than a burial. No artifacts of either stone or copper were found. Fig. 8 shows feature No. 1. This illustration also shows the limit of Dr. Spaulding's 1957 excavation. Note subsoil level in background.

FEATURE 2 – BURIAL PIT

The pit started to appear at approximately 16" and was followed down 34". At this depth, it had a maximum diameter of 14". The only things found in this pit were a few small pieces of tooth enamel, which were impossible to save. From observations at this time, it was determined that this was a small individual, probably a child who had been placed in the ground as a bundle burial. It is likely that only the one individual is represented in this burial. Red ocher was present in very small quantities.

FEATURE 3 – BURIAL PIT

Feature 3 started to appear as a discoloration, 28" below the surface. At 53", several fire-cracked stones started to appear in an area of brownish, discolored sand. Directly below this was the remains of a burial in very fragmentary condition. It is, however, definitely an adult. Because of the condition of the bones, orientation was impossible. These bones were removed, preserved, and found to lie directly above a layer of birch bark. This birch bark, in a its delicate state of preservation, still exhibited awl holes pressed in from one side only. We were able to preserve and remove some of these fragments. Directly below the bark numerous

FIGURE 9 — FEATURE 3
Globular Copper Beads and Sewn Bark

small globular-shaped copper beads were deposited in a compact mass of burned bone and slight traces of red ocher (Fig. 9). One adult individual is represented in the bundle burial and at least one more, also an adult, in the cremation. As the bones were being removed, approximately 25 fragments of the fire-cracked artifacts were recovered. We now know these to be parts of burned hornstone blades. This pit ended at a depth of 15", and was approximately 36" in diameter. At least two individuals are represented here. As the skull of the individual was placed almost in the center of the 3' pit, it is apparent that it was a disarticulated, or bundle burial, rather than a burial in the flesh (Fig. 10).

FEATURE 4 – CREMATION PIT

This first appeared at 22" below the surface, when a compact mass of burned bone started to appear. A few of the long bones, which are in very fragmentary condition, were dried and preserved. The uppermost bones do not show the effects of subjection to the intense heat that the lower bones

Figure 10 — FEATURE 3
Bones in Situ

exhibit. For this reason, they are in a more fragmentary condition. Red ocher oppears in the entire mass of bones. At a depth of 28", the entire mass of burned bones was in view and covered an area of approximately 23" x 15". Two unusual stones were uncovered directly above this burial. These consist of two natural formations exhibiting differential weathering. The smaller was buried directly over the larger one in a very dense deposit of ocher. Upon washing and cleaning it was evident that this was one large stone that had been broken into two pieces before being buried. No human alteration other than this can be discovered (Fig. 11).

From the amount of burned bone, 555 gms., it seems likely that this contains the remains of more than one individual. Numerous flint chips recovered from the pit fill seem to have been left unintentionally. None of them exhibit retouching or use scars. Examination **in situ** of the unburned portions of bone disclosed that they were those of an adult. Size of certain of the partially cremated remains indicate that at least one adult is represented here also.

FEATURE 5 – BURIAL PIT

Feature 5 appeared as a discoloration, 28" below the surface. Two small copper fragments appeared in the fill of this pit. At a 50" depth the pit was approximately 50" in diameter. The only bone material recovered was several very small fragments and the remains of one long, definitely hu-

FIGURE 11 — FEATURE 4
R-113—R-114 — Stones Exhibiting Differential Weathering

man bone, too far gone to save. At least one adult was represented in this burial, but whether it was a bundle or a flexed burial could not be determined. The two copper fragments seemed to be included by chance. They were not near the bones, but up much higher in the pit. Red ocher was present in the area of the bones and also slightly above them.

FIGURE 12 — FEATURE 7
Remains of Flexed Burial

FEATURE 6 – REFUSE PIT

Feature 6 first appeared as a discoloration at a depth of 24". The fill of this pit was composed of very dark soil which still contained organic material and very fine charcoal. Minute particles of copper were noted on several occasions. The only other item of interest was a plain grit tempered body sherd. This was close to the surface and its association with the pit was not definite. The pit disappeared at a depth of 34" and at this point the diameter was 30" and circular. No red ocher was present.

FEATURE 7 – BURIAL PIT

Feature 7 was discovered at a depth of 37" when a slight discoloration was noted. Further excavation disclosed an elongated pit with the longest dimensions east and west. At this time the remains of an adult male were visible. The head was to the east of the pit facing north. The bones were in such a state that only the skull and two long bone shafts were still visible. Position of the long bones and distance to the skull show this to be a flexed burial in the flesh (Fig. 12).

FIGURE 13 — FEATURE 7
Tooth Enamel

At the extreme western end of the pit parts of a skull were recovered. These included a small piece of frontal bone almost completely decayed and, under this, the enamel of a complete set of teeth still in anatomical order was found. The size of the teeth indicate an adult, probably a male (Fig. 13). Red ocher in a very limited amount was the only grave goods.

FEATURE 8 – PIT

Feature 8 was a smear of red ocher about 2" thick, 6" in diameter, ending at a depth of 38". No bone, stone, or copper was evident. No determination has been made as to just what this feature was. No human bones were discovered, so it could not be called a burial. By the same token, no organic material or flint chips were uncovered, so there is small chance that it was a refuse pit.

FEATURE 9 – BURIAL PIT

Feature 9 started to show at a depth of 30", and at 48" a

FIGURE 14 — FEATURE 9
Bed of Red Ocher

very carefully prepared bed of red ocher was discovered. It was approximately 48" x 84". At the extreme south end of this ocher deposit the teeth of an adult were discovered; and at the north end a small copper fragment was found, probably part of an artifact or a blank, on which a piece of birch bark had been preserved (Fig. 14). The bark showed no signs of work or alteration. At least one individual is represented here, and that is an adult. A large quantity of

FIGURE 15 — FEATURE 12
Bones in Situ

ocher was used in the preparation of the floor of this burial. Directly beneath the copper fragment and bark was one very small piece of long bone. This was definitely human and, according to the distance from the teeth, it is the remains of an extended burial in the flesh of an adult. No grave goods other than ocher were found.

FEATURE 10 – BURIAL PIT

Feature 10 appeared as a faint pit outline at a depth of 34". Further excavation revealed unburned portions of bone. These proved to be fragments of occipital bone, probably adult. A complete absence of teeth was noted. The floor of the pit was reached at a depth of 54". It was 22" in diameter and quite flat. There were no traces of long bones and no grave offering of any kind.

FEATURE 11

Feature 11 proved to be of no importance.

FEATURE 12 – BURIAL PIT

Feature 12 started to appear at a depth of 17" below the surface and it was followed down to the floor to 55". At this point, the pit was 42" in diameter. At 52", the enamel of one tooth and a number of long bones, vertebrae, and rib fragments were found (Fig. 15). Numerous sturgeon bones and flint chips were found in the fill of this burial. The burial itself is the remains of one individual, the bones of which were bundled and broken before burial. No trace of the skull, other than one tooth cap, was recovered. Red ocher was evident throughout the pit, but none accompanied the grave goods. The refuse (sturgeon bone and flint chip) in the fill could be the results of the burial taking place in an area where village midden was present.

FEATURE 13 – BURIAL PIT

Feature 13 appeared at 52" and was followed to a depth of 62". It was 28" in diameter at this point. On the western border of the pit the burial of a newborn, or very young child, with a strand of approximately 92 globular and tubular copper beads were found. The child's body was very tightly flexed, being almost rolled into a ball. Lying directly on the burial was a small copper celt with a slightly flaring bit (Fig. 16). Heavy concentrations of ocher were evident throughout the pit and across the bottom. Bits of bark and what seemed to

be animal skin, possibly part of a grave-lining or burial container, were discovered directly below the copper and burial. There was no evidence of burning or cremation in this pit, and very little organic material was recovered.

The copper beads lay in such a position as they would assume if they had been dropped into the pit with small ends together at the bottom, and the large tubular bead uppermost (Fig. 17).

FEATURE 14 – REFUSE PIT

Feature 14 was a pit starting at 36" and ending at 52" below the surface. At the 52" depth it was approximately 24" x 32" and contained nothing but discolored sand. A few flint chips were found in the fill, and also a few small fragments of calcined bone, a number of which could be pos-

FIGURE 16 — FEATURE 13
In Situ

FIGURE 17 — FEATURE 13
Copper Celt and Beads, and Infant Bones

itively identified as sturgeon bone. This is most certainly a refuse pit in which organic materials through decomposition have discolored the soil leaving only calcined bone.

FEATURE 15 – REFUSE PIT

Feature 15 was a small pit, 20' - 27" in depth, approximately 10" in diameter. Directly on top of this pit a small copper awl (R384) was found, and throughout the fill, flint flakes were found. At 27" the disturbance had disappeared and nothing more was uncovered.

FEATURE 16 – REFUSE PIT

Feature 16 appeared at a depth of 24" and was followed to 40" beneath the surface. At this point it was 36" x 48". The only things discovered in this pit were dark – discolored sand; burned bone, probably fish; very slight traces of red ocher; and throughout the fill, flint flakes and firecracked stones. This again was probably a refuse pit. However, this does not explain the presence of ocher which could only have been included by accident.

FEATURE 17 – CREMATION PIT

Feature 17 started at a depth of 20" and continued to 40" beneath the surface. This pit was approximately 48" in diameter at this point. All the bones in this burial showed signs of subjection to intense heat. Mixed with the bones were large quantities of tiny tubular copper beads, strung in parallel rows. These beads also show the results of intense heat – some of them even fused together. The recognizable bones, of which there were over 1100 gms., seemed to represent more than one adult. Approximately 330 copper beads were found throughout the pit (Fig. 18). Two small flint scrapers were recovered from the fill of the feature (R385 and R386). Some of the masses of cremated human bones were removed in large lumps with hard dark soil and sand still clinging to them. This seems to indicate that part of this feature was cremated **in situ.** The large amount of cremated bone, 1100 gms., leads me to believe that more than one individual is represented here. Many of the bones can be definitely recognized and identified as being adult human. Directly below the cremation itself occurred large blocks of bog ore or limonite, distinctly yellow in color and showing casts resulting from having been formed around organic ma-

terial like reeds. Because of the loose nature of the deposit it is doubtful that any sort of burial container was used.

FIGURE 18 — FEATURE 17

Copper Beads

FEATURE 18 – REFUSE PIT

Feature 18 was a dark discoloration, first noted at a depth of 37". It followed down to a depth of 76" where it stopped. At this point, it was 27" in diameter. The pit fill was also dark and discolored. One long bone was present which could not be identified or saved. Several flint chips, one piece of fire-cracked rock, and few calcined bones, some of which were positively identified as being of sturgeon, were found in the fill. No ocher was present.

FEATURE 19 – BURIAL PIT

Feature 19 was a flexed burial at a depth of 63". This pit started to show 37" below the surface. About 5 gms. of calcined bone were found in the fill. Most of it was fish and

FIGURE 19 — FEATURE 19
In Situ

several pieces were positively identified as being sturgeon. Red ocher was present. One flint chip, showing no signs of alteration, was found near the head. No organic material for carbon 14 dating could be recovered. The pit at burial depth was approximately 42" in diameter. This burial was of an adult female of not yet determined age. The teeth were in very poor condition. The head was to the west facing north. The right side of the skull exhibits a large hole, pressed open from the inside, as if a sharp instrument had thrust through the head. However, the opposite side of the skull is deteriorated to the point where no trace of an entrance wound could be discovered (Fig. 19-20). One molar was found loose in the mouth, the bone socket being completely healed. Possibly the bone had abscessed and rehealed,

FIGURE 20 — FEATURE 19

Lab Photo of Skull Showing Damage

leaving the tooth held in place only by the gums. Red ocher was apparent over the entire burial area.

FEATURE 21 – CREMATION PIT

Feature 21 was a dense mass of cremated bones, situated between 26" and 30" from the surface. It was 23" x 28" in diameter. Approximately 95 gms. of bone were present, including four "ace-of-spades" type of copper points (R394, R388, R389, R391); two crescents, one large (R395) and one small (R392); and also two copper awls, one large (R390) and one small (R393) (Fig. 21). A number of beaver incisors were present in this burial, but none could be saved. Red ocher was apparent throughout the burial. Several flint chips were found directly above the bone mass, but did not seem to be associated with it. The bones are well calcified, but several can be definitely identified as being human. A rather small individual – probably a child, was represented here. The copper awls and crescents show signs of being hafted when buried, although none of the wood could be preserved or identified. The two crescents were lying very close together, but not touching. The uppermost artifacts in this cache were two "ace-of-spades" copper points. Directly under this was the larger awl, followed by two more copper points. Beneath this was the smaller awl, and then the crescents. The beaver incisors which were mixed with this deposit showed no evidence of modification. All grave goods were in a limited area suggesting burial in a bag or container. There seemed to be no arrangement as to the way the projectile points were oriented, one pointing northeast, one east, one south, and another slightly southeast. From their position, I would assume that the points were not hafted at the time of burial.

FEATURE 22 – BURIAL PIT

Feature 22 started to show at a depth of 40" below the surface, the pit bottom was at 51". This burial represents one individual buried in the flesh, either flexed or possibly bundled. The bones show no signs of burning. There were no artifacts present. Red ocher was spread over the entire area. One fragmentary tibia with sand around it was preserved with acrylic lacquer and removed intact. Other than this, nine pieces of long bone were saved, plus 40 teeth. Three

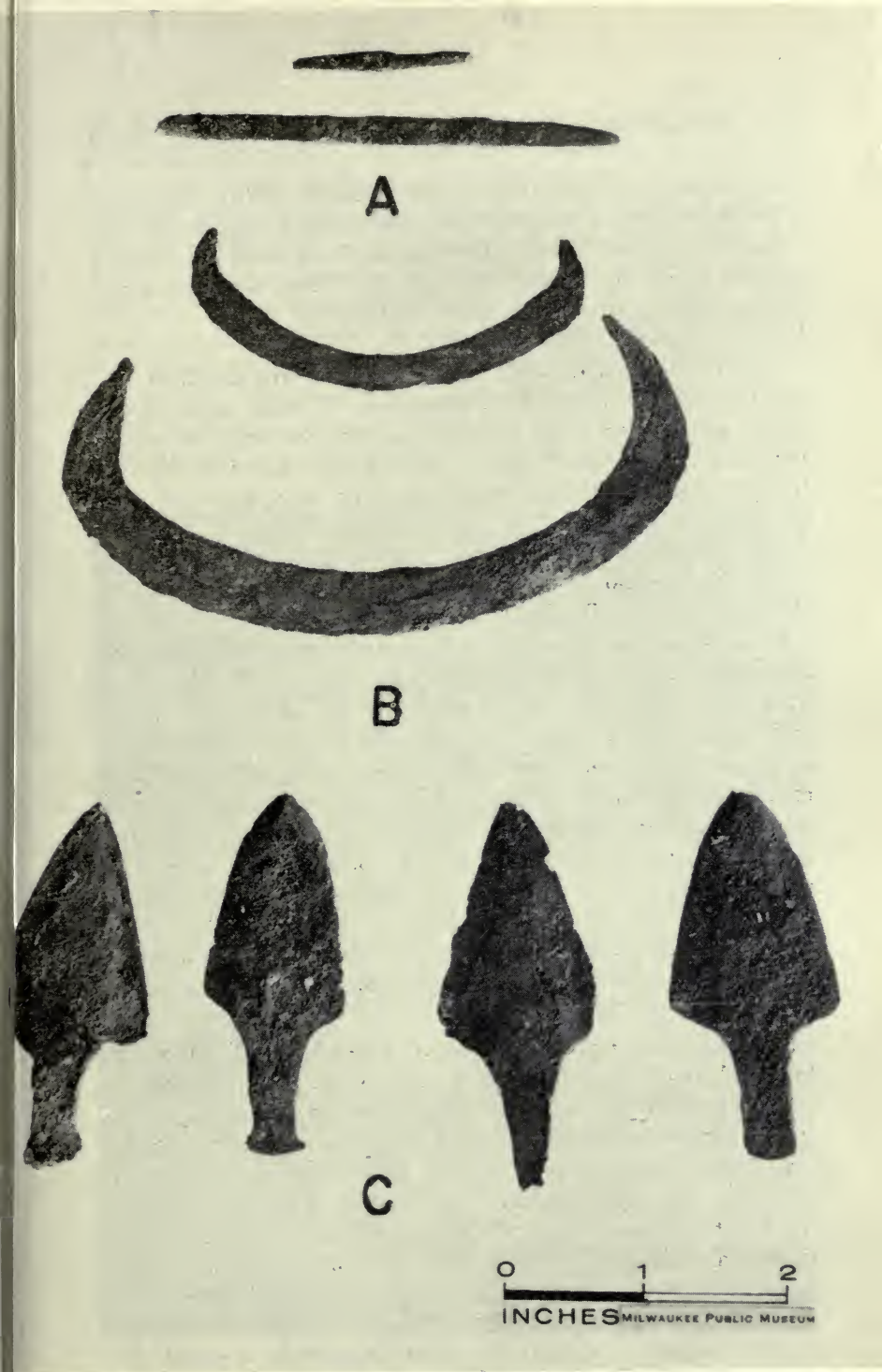


FIGURE 21 — FEATURE 21
Copper Artifacts

other teeth were destroyed during removal. With unerupted teeth still in the jaw under the primary ones, this represents a burial of an adolescent. This burial had a large woodchuck burrow extending directly through it. There were no grave goods other than a heavy deposit of ocher.

FEATURE 23 – REFUSE PIT

Feature 23 started at 50" and was traced to a depth of 64". At this point it was 32" in diameter. A small trace of red ocher was present. No human remains were discovered. A few flint chips were found in the fill, as were a number of burned bones, many of which could be recognized as sturgeon.

FEATURE 25

See Feature 30.

FEATURE 26 – BURIAL-CREMATION PIT

Feature 26 started to show at a depth of 36" and was followed to 50", at which point it was 32" x 48". Numerous flint chips were found throughout the fill. At 50" an adult, unburned, human skull was found and directly below it cremated bone. Red ocher was present. The unburned skull represents one adult. No long bones were present so burial type cannot be determined. At least one individual is also represented in the cremated bones. Some portions of skull are identifiable. Mixed with the cremated human bone was found one antler tip which had been calcined but showed no alteration, and also several small fragments of sturgeon bone. At least two individuals are represented in this burial.

FEATURE 27 – BURIAL PIT

Feature 27 started to appear at a depth of 20", and was followed down to a depth of 54", at which point it was approximately 32" in diameter. This burial contained the flexed remains of an adult female. Red ocher was present. Copper was present consisting of a very large pike or awl (R37), which was wrapped in some sort of skin. The skin probably represented either a handle, case, or cover. This copper awl is angular and rectangular in cross-section. Eight large hornstone blades were also found (R27, R28, R29, R30, R32, R33, and R34). Artifact R35 represents either a whetstone for sharpening or polishing copper or perhaps a stone that was used to make paint pigment. Artifact R36 is a small red

ocher type blade or blank possibly made of a local material. The female in this burial exhibited some tooth wear, but on the whole the teeth were in quite good condition. The few long bones were preserved through contact with the copper awl, and were a fower humerus, upper radius and ulna, upper tibia, and lower femur. The skull was removed intact, with five vertebrae still in place. Upon cleaning the vertebrae, a number of shell beads were discovered. These are the large globular beads made of salt-water shell. Their position indicates use as a snug necklace. The entire top of this burial

FIGURE 22 — FEATURE 27
In Situ

was covered with large sheets of birch bark which seemed in very good condition. It is not certain that there is a definite association between the bark and the burial itself, even though all of the bark exhibits charring. This burial was oriented with the head to the west. Because of the pit bottom

FIGURE 23
Artifacts from Feature 27

being quite small the body was flexed in a somewhat sitting position. A few small fragments of calcined bone were found, but these were probably included by accident in the grave fill. There is a little doubt in my mind about using this bark material for carbon 14 dating, as it is not actually in contact with the bones or artifacts. There is no evidence of human workmanship on this bark: no awl holes, cuts, scratches or knife marks. Being above the burial, there is a chance of it being of a more recent origin but little possibility of it being older (Fig. 22-23).

FEATURE 28 – CREMATION PIT

Between a depth of 22" and 24" portions of a partially burned human skull, jaw and small fragments of charcoal were discovered. There were also a number of flakes of calcined bone, none of which were large enough to be identified. This shall pit was possibly used as a cremation pit, because of the evidence of fire actually being in the ground at this

FIGURE 24 — FEATURE 26
Cremation in Situ

point. However, very little charcoal was found, hardly enough to carbon 14 date. At least one individual is represented here, and that is an adult. No ocher was present (Fig. 24).

FEATURE 29 – CREMATION PIT

Feature 29 started to show at a depth of 30". It was traced down to a pit-bottom of 78". Ot this point the pit was approximately 36" in diameter. In the fill of the pit, slightly above the burial itself, many broken hornstone artifacts were found (Fig. 25). These exhibited evidence of being broken by great heat, such as would be present in an intense cremation fire. At this time it is impossible to completely recon-

FIGURE 25 — FEATURE 29
Fire Shattered Artifacts

FIGURE 26 — FEATURE 29
Hornstone Blades

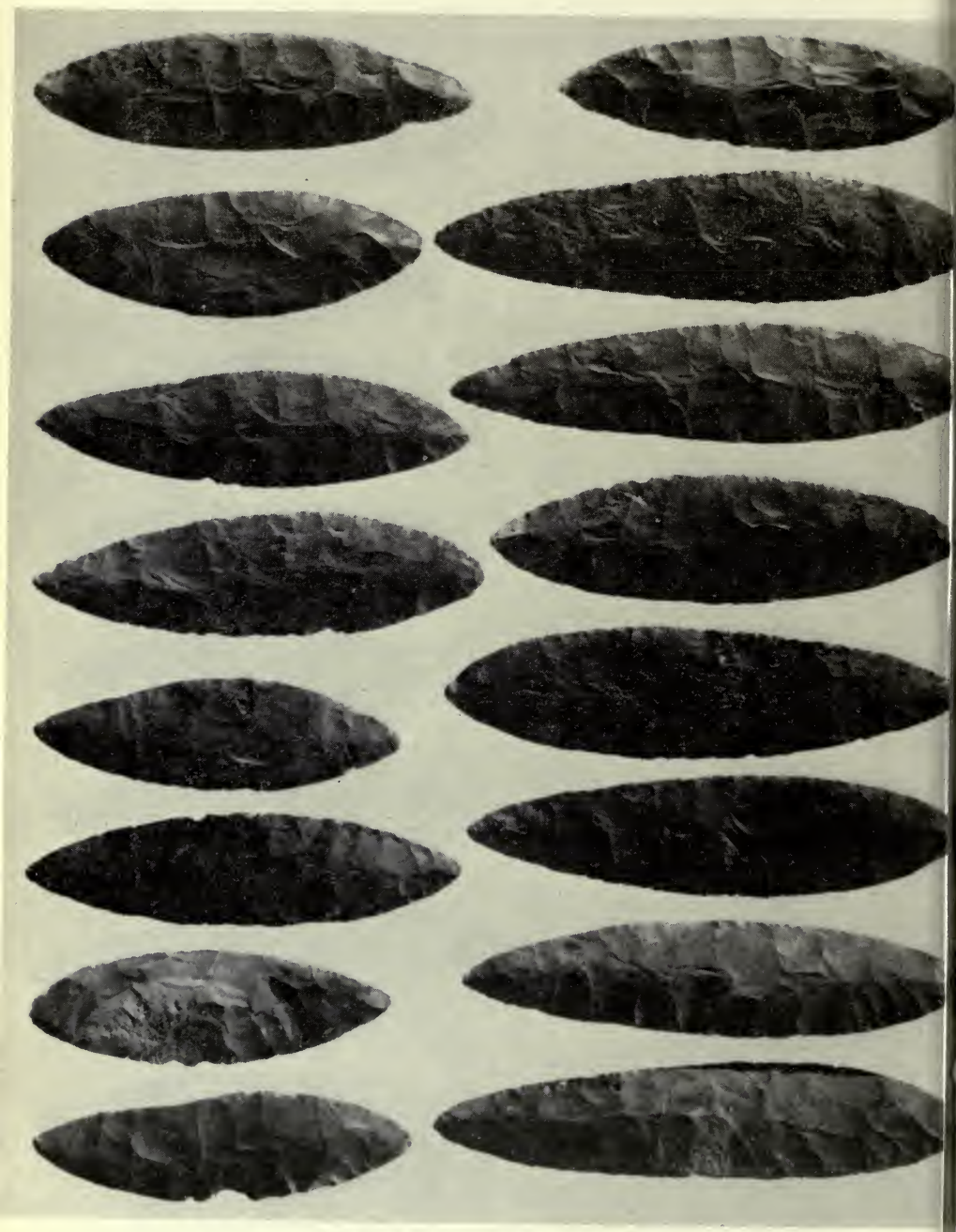


FIGURE 27 — FEATURE 29

Hornstone Blades

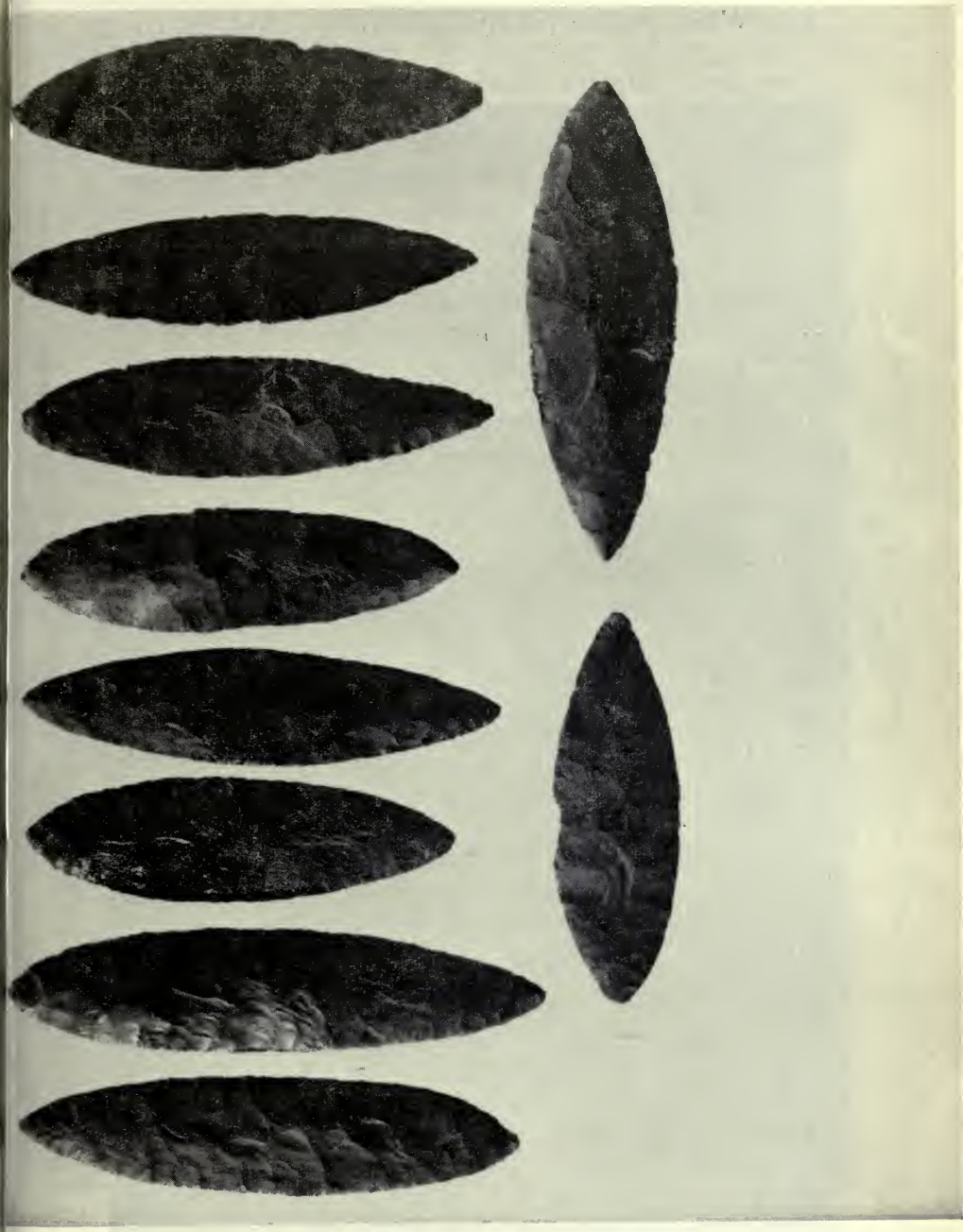


FIGURE 28 — FEATURE 29
Hornstone Blades

struct the fire-cracked blades, as they are badly warped and many pieces are missing.

Directly below the fire-cracked blades, large hornstone blades came into view (Fig. 26-27-28). After being completely cleared, two slightly separated dense compact masses of human bones were discovered. The space between was filled with the hornstone blades, laid in overlapping positions similar to shingles. After being photographed the blades were removed, leaving the burial packets in the ground (Fig. 29). Blade removal was accomplished by assigning and marking each blade with a number as each was lifted from its position. This position was noted on a drawing and a photo was taken. By this method a record of blade relationship was

FIGURE 29 — FEATURE 29
In Situ

FIGURE 30 — FEATURE 29
Burial Packet Including Beads and Blades After Removal

permanently kept.

The packets were hardened with numerous cans of acrylic lacquer and a steel sheet inserted under them. Next they were covered with a film of plastic and then firmly imbedded in plaster. Upon examination these packets were seen to be made of large masses of cremated bone, wrapped in a fabric which has not yet been identified (Fig. 30-31). Over the fabric were numerous strands of large globular copper beads. Directly over the beads a few fragments of birch bark were recovered. There has been no estimation made of the number of copper beads as yet. Ocher was present throughout the burial. Several small pieces of blade show fracture and breakage caused by blows struck at right angle to the sharp edge. It would seem from this that certain of the grave goods were intentionally broken before being placed in the cremation fire. The burial bundles are still preserved intact and will probably stay this way for use as exhibit material. The only organic material, suitable for carbon 14 dating, is a few fragments of charcoal which were found below the 5' level and above the burial itself. These pieces have had no contact with acrylic lacquer or other preservatives. Any material taken from the burial bundles themselves would be unsafe to use. A minimum of two individuals were represented here.

FEATURE 30 – BURIAL PIT

This feature, a bundle burial, first appeared at a depth of 55". Fragmentary bones recovered were identified as two tibia, one femur, one calcaneus and other assorted foot bones. At the same level a number of calcined bones appeared. These consisted of two skull fragments, the one condyle, lower jaw and other assorted calcined human bones. One stone point (R396) was recovered and was in direct contact with the unburned bones. It shows the effects of intense heat, although it is not broken (Fig. 32).

At this time it was discovered that which was thought to be the pit floor was in reality a shelf on the side of a much larger pit. This pit extended down to a depth of 144" from the present surface. Numerous pieces of charcoal as well as large quantities of dark-colored sand surrounded the bones. The bones, in this case, represented an adult buried in a

FIGURE 31 — FEATURE 29
Burial Packet With Beads After Removal

flexed position. Only the lower legs and part of one foot and the shaft of one femur were apparent (Fig. 33). At the knees in a small compact bundle were 13 hornstone blades (R1 - R13) (Fig. 34). Their compact placement suggests burial in a bag or container which has since completely decayed.

Discolored areas and burned sand indicates that some of the burning took place in the pit itself. The charcoal fragments in the burial fill showed vertical grain which seemed to be portions of oak logs which stood on end to support the walls of the excavation. Numerous pieces of bark probably represented a roof or cover of some type. The entire structure was burned to some degree before filling. This was by far the deepest burial discovered at the Riverside Site and

FIGURE 32 — FEATURE 30
Bundle Burial and a Point

contained the remains of at least three individuals.

FEATURE 31 – BURIAL PIT

This feature appeared at a depth of 11" below the surface. At 55" large quantities of charred wood started to appear. At this point, it showed as a charcoal-lined pit, with most of the ocher appearing outside of the charcoal. At a depth of 60" charcoal and fragments of burned log were uncovered. Over the top are pieces of birch bark showing traces of having been sewn (Fig. 35-36). The edges of several pieces exhibited two rows of large holes. Occasional fragments of

FIGURE 33 — FEATURE 30
Bones and Blades in Situ

FIGURE 34 — FEATURE 30
Artifacts

the lashing were seen, but could not be preserved. Certain portions of the bark exhibits what are most certainly tool marks on the inner side. This is most likely the remains of a pole or log roof covered with birch bark which was burned and collapsed. However, not enough was there to reconstruct it. An attempt was made to identify some of the charcoal

FIGURE 35 — FEATURE 31
Bark Covering

FIGURE 36 — FEATURE 31
Bark Covering After Removal

while it was still damp and had not crumbled. Oak, pine and perhaps maple have been identified. Red ocher is spread quite evenly throughout the fill. Just below this a few teeth were found in a deposit of ocher. They show very little, if any, wear, are quite small, and represent the burial of a child or adolescent. Nearby were a few flint chips and thirteen blades (R14-R26) (Fig. 37). All of the blades, except

FIGURE 37 — FEATURE 31 **Blades in Situ**

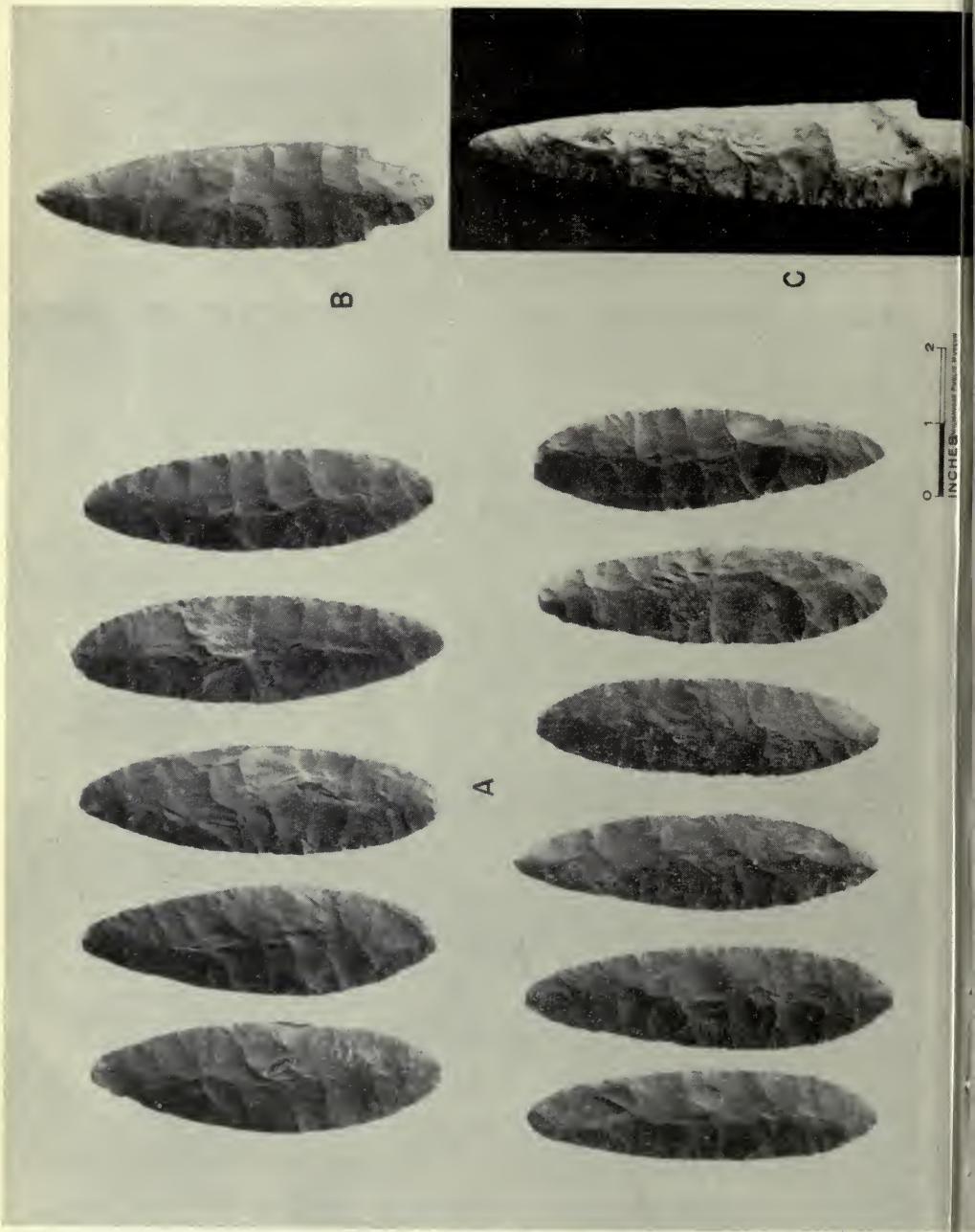


FIGURE 38 — FEATURE 31
Blades

two, are of the usual double-pointed, hornstone variety. The two exceptions are one hornstone blade (sort of a modified turkey-tail base) showing signs of hafting; the other is a long, slim, very light-colored dagger (this again shows a stem base) (Fig. 38). At this point a number of acorn caps were found. The pit was then cleaned, the floor was troweled off, and it was discovered that it continued deeper. At 67" from the surface two more skulls started to appear (Fig. 39). These were labeled "A" and "B". Skull "A", a female, was on the west side of the pit, had two moose teeth, one near each ear. These were incisors with very pointed roots; and at one time had probably been pierced through the lobes of the ears. This skull also had a slightly different color from any of the

FIGURE 39 — FEATURE 31
In Situ

other Riverside burials. It seemed a little whiter and more bleached. From first appearance it seemed in excellent condition, but after being turned over it was found that the entire face and lower jaw had been crushed. If this was not done when the individual was alive, it must have been done when there was still tendon and muscle attached. The upper ends of the lower jawbone were still in their socket, but the jawbone had been split and forced out on each side of the

FIGURE 40 — FEATURE 31
Skull "A" Showing Moose Tooth

skull. The nasal bones were pushed up into the eye sockets and the palate was pushed back into the cranium itself. No other trace of this individual was discovered in this pit (Fig. 40-41-42). Skull "B", a male, was located at the south end and atop a bundle burial with the mandible directly below, but disarticulated. This individual had been partially dismembered, but some of the long bones had been left articulated. All of the bones were stained a very bright green color, and in one case the cast of the copper bead (globular in shape and quite round) was recognized but could not be saved. The entire amount of copper in this burial had turned

FIGURE 41 — FEATURE 31
Skull "A" After Removal

to oxide and stained and preserved some of the bones quite well. This individual was represented by a pelvis bone, one partial sacrum, two vertebrae, three partial vertebrae, three ribs, one partial rib, one clavicle, two patellas, one mandible, several large skull fragments, one hand (partially preserved with copper oxide), and several long bones (Fig. 43). Three

FIGURE 42 — FEATURE 31
Skull "A" After Removal and Restoration

individuals are represented in this burial. A large amount of charcoal was saved for carbon 14 dating. All of the charcoal was collected more than 60" below the surface.

FEATURE 32 – BURIAL PIT

Feature 32 first made its appearance when at a depth of 48" a large platform of rocks was discovered. These were pieces of limestone obviously brought up from the nearby river. Small traces of ocher could be seen among the rocks (Fig. 44). As the large stones were removed, it was apparent that there was a flexed burial beneath them, with the head to the west. This feature was doubly difficult to interpret because when the rocks were removed, they would tend to adhere to the layer beneath and bone would be removed

FIGURE 43 — FEATURE 31
Individual "B" Before Removal

with them. Also, the rock layer was directly beneath the roots of a very large oak, which we found too difficult to remove at that time.

A large adult male is represented here. The bones are fairly sound, but have been badly broken from the pressure of the stones. Near the west portion of the pit a second unburned skull was discovered. This, too, was badly broken. Scattered over the entire area, beneath the stones, was approximately 450 gms. of calcined bone, much of which could be identified as being human. Also on the west end of the pit were tooth caps still in their original position, although all traces of the jaw had disappeared. This was a child or adol-

FIGURE 44 — FEATURE 32
Stones Over Burials

escent. Grave goods accompanying this burial consisted of one copper crescent (R406) and one ace-of-spades copper point (R407). The copper crescent was directly between the legs of the flexed burial, sharp edge towards the feet. Traces of the handle could still be seen. Small pieces were actually preserved on the ears or tips of the crescent and portions of the outline could still be seen. It was basically the shape of a slingshot crotch or a "Y" with one side of the fork fastened to each end of the crescent. None of this could be preserved. The flexed individual was lying with his left side down, facing the northwest. The ace-of-spades copper point was directly in front of the rib area and pointing approximately

FIGURE 45 — FEATURE 32
Copper Artifacts

northwest, with the base towards the body (Fig. 45). Here again, portions of the shaft could be observed, but none could be preserved.

The diameter of the pit at the 55" level was 26" x 48". Ocher was apparent throughout this burial. Bone recovery consisted of 27 skull fragments, one partial upper plate, one near-complete mandible, one partial right mandible, two fused thoracic vertebrae, one second cervical vertebrae, 25 partial vertebrae, one partial radius, one partial ulna, one lower femur, one partial pelvic bone, two sets of teeth fused in sand, one upper section of the tibia, one partial humerus, one upper section of the radius, one partial head of the femur, one partial head of the radius, four partial clavicles, one partial scapula, one partial fibula, and 39 rib fragments.

FEATURE 33 – REFUSE PIT

Feature 33 was a pit starting to appear at a depth of 17" and was traced to a depth of 36", at which point it disappeared. It was approximately 14" in diameter. Slight traces of charcoal were discovered, although no red ocher and no other artifacts worth dating could be found. Flint chips and one fragment of bone were found in the fill.

FEATURE 34 – BURIAL PIT

Feature 34 consisted of human teeth found at 36" in a small smear of red ocher. No pit outline was apparent. Small traces of red ocher covered about an 8" radius about the teeth. These teeth are the remains of an adult and were still in the same position and order as when in the jaw. No traces of bone could be found. Other than being photographed, very little could be done with them, as they were too far gone to be preserved. This burial represents one individual, an adult. There was no accompanying grave goods other than red ocher (Fig. 46).

FEATURE 35 – BURIAL PIT

Feature 35 started to show at a depth of 48". At this point red ocher and a chalky substance were noticed. At 60" a flake or blank (R413) was found on the north side of the pit. At 66" a large soft, red stone (R418) was found on the east side of the pit. At 69" on the west side, a blank or unfinished projectile point (R11) was found. At 72" on the north side of the pit, a large core or chopper (R414) was discovered.

A second and third piece of the same soft, red stone was found at a depth of 72" beneath the surface of the east side of the pit. Also found were a quartzite point, a partially-worked black stone, two fragments of fire-cracked stone and a large flake or core (R419, R420, R412, R416, R415). One piece of fire-cracked, jasparized hematite (R417) was also recovered from the bottom of this pit. Two other points (R419, R410) were located at the 60" level, both on the north side of the pit (Fig. 47-48). A number of calcined

FIGURE 46 — FEATURE 34
Tooth Enamel

bone fragments and flint chips were found throughout the fill of this pit, but none are identifiable at this time. Small traces of red ocher were present. No organic material was found, but because of the grave goods this is probably a burial of which all traces have disappeared. No tooth enamel was found. The pit bottom was 78" from the surface, and 48" in diameter. It is unknown as to how many individuals are represented.

FIGURE 47 — FEATURE 35
Artifacts in Situ

FIGURE 48 — FEATURE 35
Stone Artifacts

FEATURE 36 – BURIAL PIT

Feature 36 is represented by a slight ocher discoloration at a depth of 44" - 48" below the surface. Several skull frag-

FIGURE 49 — FEATURE 36
Skull Fragments in Situ

ments were recognizable, obviously human (Fig. 49). The only artifacts found were a round ball (R398), commonly called a "game ball," and an unusual stone showing effects of differential weathering (Fig. 50). These were directly in association with the unburned bone fragments and the slight traces of red ocher. This burial represents one adult individual. None of the bone, however, could be preserved. The diameter of the pit could not be determined. No charcoal samples were taken.

FEATURE 37 – BURIAL PIT

Feature 37 started to appear at a depth of 36". At this point, post molds first were seen (Fig. 51). After following them down a short way, it became very apparent that these were oak logs which had been burned in place while standing on end. There were 16 logs in all. Fourteen of them were extended around the outside of the pit and two down the center. Large amounts of charcoal from the burnt logs were saved for a carbon dating sample. At a depth of 54", a burial of two adolescents started to appear (Fig. 52). One of them was in a flexed position with both lower arms covered with strands of copper beads, approximately eight strands around each arm. In the waist position of this burial, most of the bones had completely deteriorated, but there were many globular copper beads, about 560 in all. The second child was directly beneath the first but as it had no copper

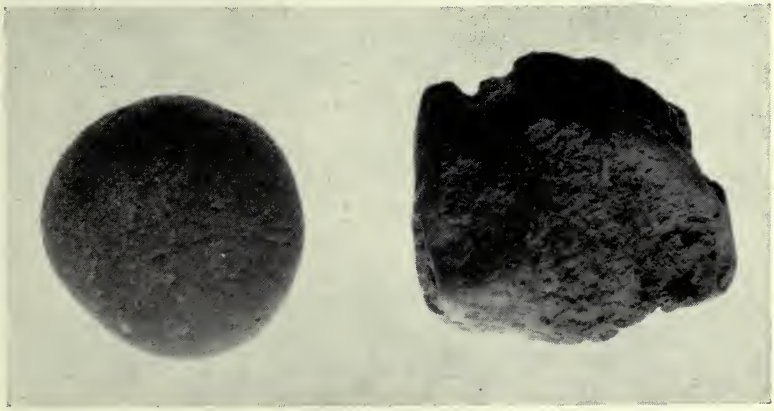


FIGURE 50 — FEATURE 36
Artifacts

in contact with its bones, it was in a very poor state of preservation. These two individuals showed no traces of burning. Ocher was spread liberally throughout the burial.

A cache of large blades and one copper celt was found directly under the beads in a position that would have been between the two bodies. Of the twelve blades (R91, R84, R85, R87, R83, R88, R90, R89), six are of blue-gray hornstone with a point on each end. Number R91 is a much larger and wider blade which was probably originally pointed on both ends. The base however, had been carefully reworked so that it squared off at about ¾" in width. The other two large blades (R90 and R89) show evidence of hafting; one is what might be termed a modified "turkey-tail".

FIGURE 51 — FEATURE 37
Post Molds

and the other has a wide stemmed base. The copper celt (R92) is still covered with organic materials and ocher and has a very slight flare to the bit (Fig. 53). Directly below this burial, a large compact mass of calcined bones was found. This bone mass was liberally sprinkled with red ocher. In this mass of cremated bone, three fire-cracked artifacts were recovered (R99, R98, R96). These consisted of the tip of a projectile point, the base of a projectile point, and one worked piece of flint that was impossible to identify as to artifact type. Also found in the cremated bones was a base of a broken "turkey-tail" of the narrow variety (R97). Further down in this compact bundle of calcined bones, three

FIGURE 52 — FEATURE 37
Burial and Artifacts in Situ

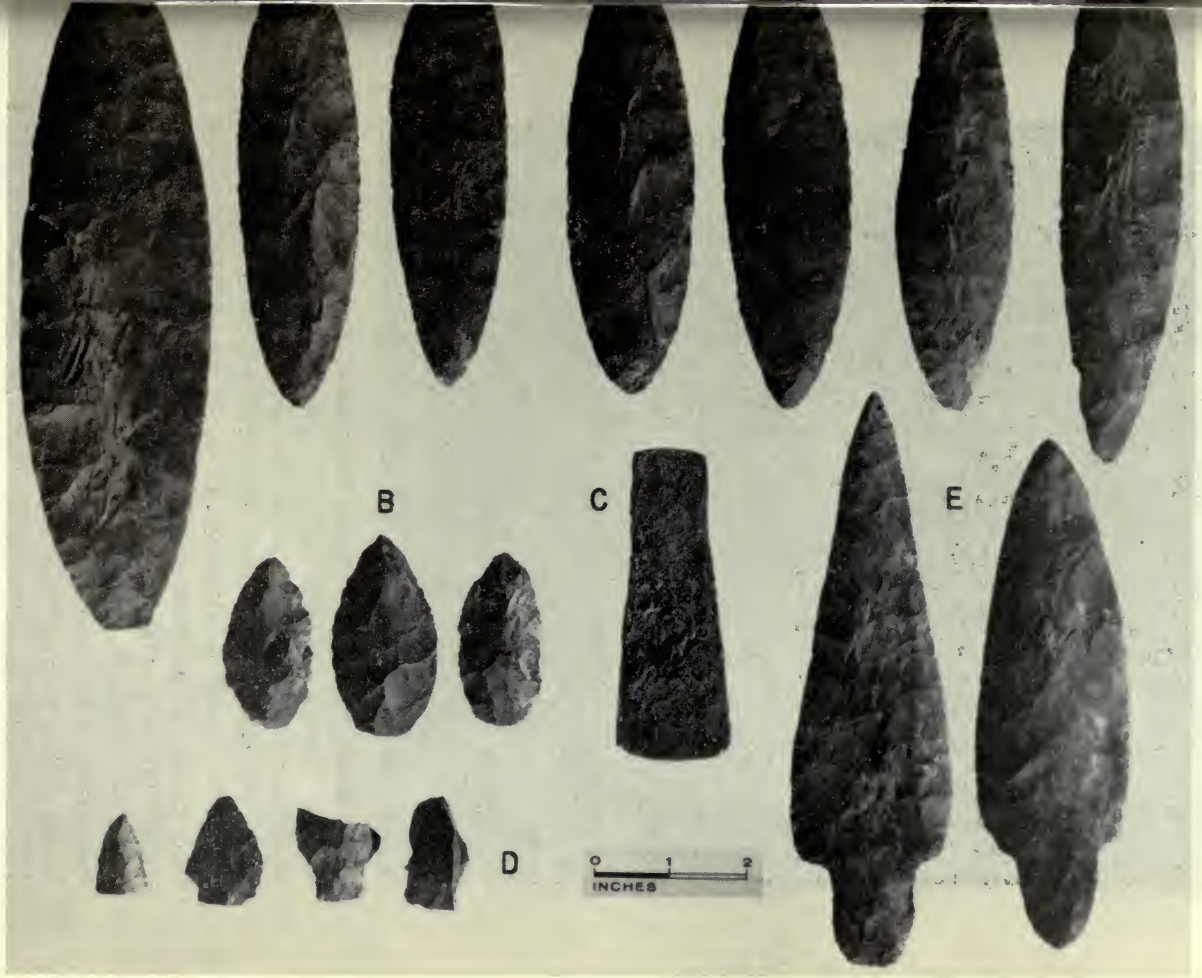


FIGURE 53 — FEATURE 37 Artifacts

M
R
MEM
GOV. L
OSH
6

FIGURE 53 — FEATURE 37 Artifacts

small, leaf-shaped blades (R94, R93, R95) were found. These three pieces were somewhat similar to small oval red ocher knives or blanks. A tooth in a fragment of the jaw of a white tail deer was recovered directly above and within about 3" of the burial along with a third pre-molar of an adult animal. Also, several charred specimens, which proved to be fragments of a pine cone and part of a hazel nut and shell, have been preserved. There were approximately 3,075 gms. of bone in the cremation bundle. At least four individuals are represented here. At the depth of the cremation, which was 66" from the surface, the pit was 36" by 48" in diameter. The lower portions clearly showed that this pit had been shored up with logs at one time and then burned before filling had been completed.

FEATURE 38A – BURIAL PIT

This first appeared at a depth of 54". It was followed down to 56" where the enamel of human teeth was discovered. No ocher was present. At least nine teeth of the lower jaw, still in their proper order, were visible. These were sprayed and removed intact. Upon closer examination, the teeth, which had been fused into a block of sand with acrylic lacquer, proved to be both upper and lower sets still in their proper order. These were the remains of an adult. The pit diameter at the bottom was 35".

FEATURE 38B – BURIAL PIT

This began at a depth of 52" and extended to a depth of 64" at which point the pit was 36" in diameter. This was a very dense mass of cremated bones mixed with red ocher. The entire contents of the pit were carefully sprayed with acrylic lacquer and removed intact. They were then encased in a block of plaster which has not as yet been opened. At least one individual is represented here. Very little discoloration was noted, and no artifacts were discovered.

FEATURE 39 – BURIAL PIT

Feature 39 first made its appearance at a depth of 28". At this point numerous calcined bone fragments were visible. Three inches deeper red ocher started to appear for the first time in this pit. The specimens of calcined bone are quite scarce and are in most cases quite small. No pieces are identifiable as human. Within the red ocher stain, but not

mixed with the calcined bone, was a full set of adolescent human teeth still in their proper order. This pit ended at a depth of 31", and at this point it was approximately 26" in diameter. Red ocher was present and was the only accompanying grave good. No organic material was present. At least two individuals are represented here, I am assuming that the calcined bones are human, as no fish or turtle or bird bones can be identified.

FEATURE 40 – BURIAL PIT

Feature 40 first appeared at a depth of 31". At this point portions of a long bone, probably a femur, were visible. Twelve inches to the southeast of the long bone were fragments of human teeth and scraps of badly decomposed bones. A lump of very soft limestone and traces of charcoal were also observed in the area. At a depth of 33" all traces of the pit had disappeared. The largest diameter of this pit was 24". At least one individual is represented here. Several pieces of fire-cracked stone and fragments of flint were discovered in the fill but did not seem to be intentional inclusions in this burial.

FEATURE 41 – BURIAL PIT

Feature 41 appeared as a discoloration at the depth of 18" below the surface. As this pit was being shoveled down, a polished bannerstone was discovered in the fill (R631). Since this bannerstone was found some distance above the burial, there is doubt as to whether there is a direct association (Fig. 54-55). At 39" a flexed burial was evident (Fig. 56). The orientation of this burial was almost perfectly east to west with the head toward the western end. The body was lying on its right side with the face slightly downward and to the south. Two inches north of the femur a projectile point (Fig. 57) was discovered (R1014). A second projectile point (R1015) was uncovered 8" northeast of the base of the skull (Fig. 58). This exhibits a freshly broken base. Copper flecks were noticed just to the south of the skull, but these were too oxidized to be distinguished as artifacts or merely fragments. All bones between the neck vertebrae and the pelvis bone were completely deteriorated. No trace of them could be found. The feet and head, however, were in fairly good condition and were removed intact. This is the

FIGURE 54 — FEATURE 41
Bannerstone & Points

BANNERSTONE
from

RIVER SIDE SITE, MICHIGAN

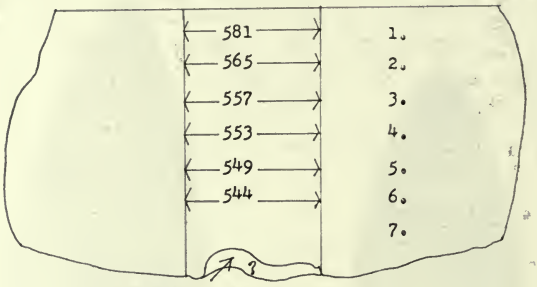
Measurement of
hole (only)

Museum Number R-631

Out of Round

1. - .016
2. - .012
3. - .011
4. - .012
5. - .012
6. - .008

Smooth Side

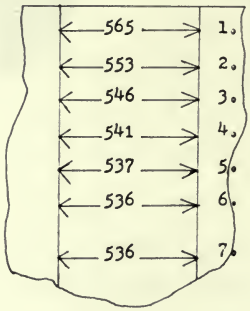


.037 Taper

Side View

Number 7 Chipped out

Smooth Side



.029 Taper

End View

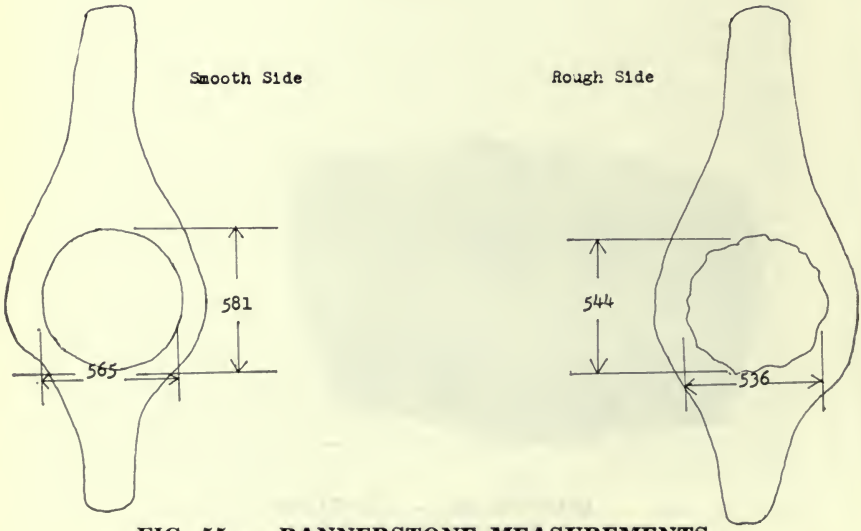


FIG. 55 — BANNERSTONE MEASUREMENTS

burial of a female, obviously young because the sutures were still open and the teeth were in quite good condition. At the time of burial the hands had been placed over the face, as one of the finger bones was still in place in the left orbit. The lower or right portions of the skull and jaw were in much better condition than the uppermost. Upon removal, part of an artifact was found lying directly against the right ramus (Fig. 58-59-60). This was cemented in place and removed as a unit. Also, two vertebrae were left attached to the skull. When the skull was cleaned in the laboratory, the attached portion of the artifact was removed, and it proved to be the center portion of a projectile point. Directly beneath it on the ramus was evidence of its having been thrust into the jaw

FIGURE 56 — FEATURE 41

In Situ

and broken. The bone clearly shows a clean breakage. The gonial portion of the ramus had been broken off and was not in the burial. Upon removal of the two neck vertebrae, another portion of the same point was discovered directly between them. This clearly indicates a wound which must have resulted in death. No traces of healing were apparent on the broken bone surfaces, and the small portion imbedded between the vertebrae would certainly have damaged the spinal column. Not enough of this point could be found, however, to determine its type. Perhaps the other two points were also imbedded in the body at time of burial. The direction of the pointed ends and the base of a missing one certainly lends support to this theory. At the burial level the pit diameter was approximately 40", its widest dimension. Red ocher

FIGURE 57 — FEATURE 41
Lower Portion Showing Point, In Situ

was present. One female individual was represented here. There was a small amount of charcoal near the bones, but too little for radiocarbon dating.

FEATURE 42 — REFUSE PIT

Feature 42 was a refuse pit appearing from 36"-40" beneath the surface. Several small calcined bone fragments as well as a number of flint flakes (none of which show retouching or use) were recovered here. No organic material or red ocher was found. One copper awl fragment was discovered at the 37" level. At a depth of 40" the pit was approximately 42" in diameter. One badly broken point was found in the fill. Since both the base and the tip are gone it is impossible to determine the type.

FIGURE 58 — FEATURE 41
Upper Portion Showing Point, In Situ

FEATURE 43 – BURIAL PIT

Feature 43 first appeared at a depth of 21". At 28" four human teeth were found, but not in anatomical order. Approximately 1" beneath them, three additional loose teeth were found giving a total of seven teeth in this group. At the same level, eighteen teeth in anatomical order with portions of the mandible still present were uncovered. These teeth were quite small and badly worn, and pulp cavities were visible. The eighteen teeth occurred in two groups: one of eleven teeth in a mandible and the other with seven teeth, but no maxilla visible. Obviously, portions of both jaws were present. Charred bone fragments were found throughout the pit fill but in many cases these were sturgeon bones. Fragments of at least one projectile point came from the pit fill;

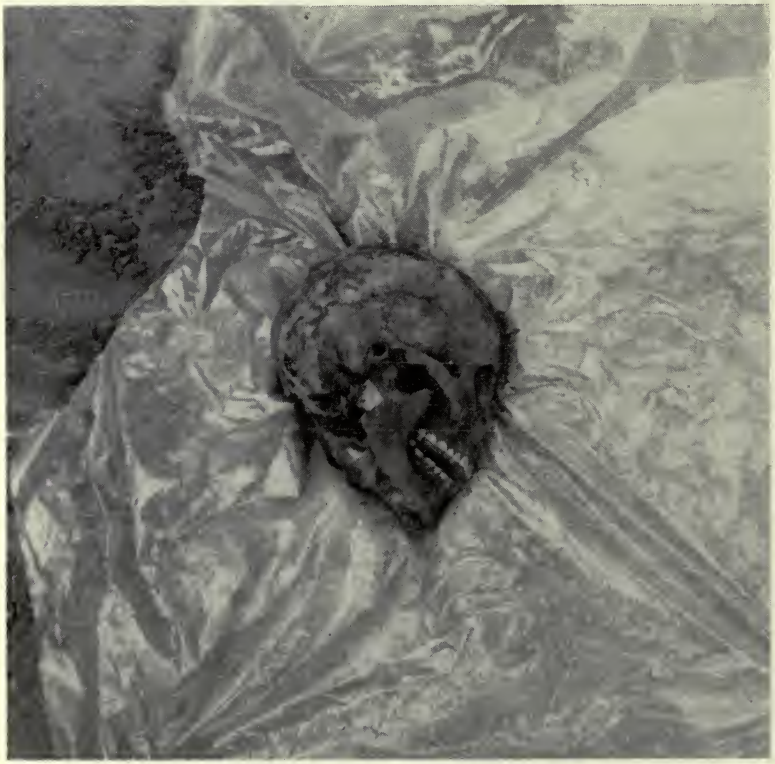


FIGURE 59 — FEATURE 41
Skull Inverted to Show Fragmentary Point, In Situ

however, no complete lithic artifact was associated with the burial. Fire-cracked rock and badly weathered limestone were common in the pit. At a depth of 49" the pit outline had disappeared and stratified sand was visible. At this point the pit was approximately 72" in diameter. One thin-rolled copper bead was also found in the fill, but not in direct association with the burial. One individual is represented here, probably a female. A large carbon sample in the form of charcoal is available from the pit but will not be used.

FEATURE 44 — BURIAL PIT

Feature 44 occurred at a depth of 32"-34" beneath the surface. Red ocher was present, but no organic material or artifacts were uncovered. This pit was approximately 30" in diameter and contained the remains of one adult individual. The burial is represented by several skull fragments, one tooth, and one small fragment of long bone. The bones had

FIGURE 60 — FEATURE 41
Skull and Fragmentary Point

not been burned and it could not be determined whether this was a flexed or bundle burial. One adult individual is represented here.

FEATURE 45 – BURIAL PIT

In feature 45 red ocher was first noticed at a depth of 27" from the surface. A circular pit was followed down to a depth of 40" at which point ocher was no longer visible. At 41" ocher was again visible, and human teeth were encountered at 42". At a depth of 46" portions of a skull, ileum, and femur were visible along with two copper awls with wooden handles preserved by the copper salts. These two copper awls (R1018, R10,19) were in place upon the pelvis, and very tiny fish bones, mostly vertebrae, which had also been preserved by the copper, were associated with them (Fig. 61). This pit stopped at 48" and was approximately 36" in diameter with very steep sides and a flat bottom. This burial was flexed with the head highest and inclined twards the west. It is impossible to determine what type of wood the awl handles are made of. An interesting aspect of the better preserved and larger of the two is a beaver tooth inserted in the opposite end of the wooden handle, much as we would haft

FIGURE 61 — FEATURE 45
In Situ

a chisel (Fig. 62). The inner end of this awl is bent 1/8" at a right angle to help secure the handle. This burial represents one individual, a small person, probably an adolescent. A pelvis, secrum, and three vertebrae, partly preserved by copper contact and stained a bright green were removed intact. Ocher was present throughout this burial. No organic material was preserved for carbon dating.

FEATURE 46 – A PROBABLE BURIAL PIT

This pit first started to appear when three limestone slabs and one of granite appeared at a depth of 16". These showed no signs of alteration. Immediately beneath the slabs a pit outline took form. A 1" copper awl fragment was discovered 58" beneath the surface. Nothing else was found until at a depth of 77" a chert projectile point was uncovered in the southeast side of the pit. At 80" four more stemmed base projectile points were uncovered. The relative position of all five projectile points was plotted on graph paper. The pit was at this time 86" deep with no bones yet visible. A sixth projectile point was uncovered next to a limestone block at a depth of 84" (Fig. 63). Stratified sand was visible beneath this last point, indicating the pit bottom. At 65" two charred vertical posts were observed in the central portion of the pit. These could only be followed for a very short way, and charcoal samples were saved from them. No pattern could be discovered, however. This is evidently a burial pit in which all traces of human remains have disappeared. No ocher was present. The artifacts from this feature were numbered R1008-13 (Fig. 64).

FEATURE 47 – REFUSE PIT

Feature 47 first showed as a discoloration at 16" beneath the surface. At this point red ocher was visible. It was followed down to 30" at which point it disappeared. There the discoloration was approximately 60" in diameter. A large

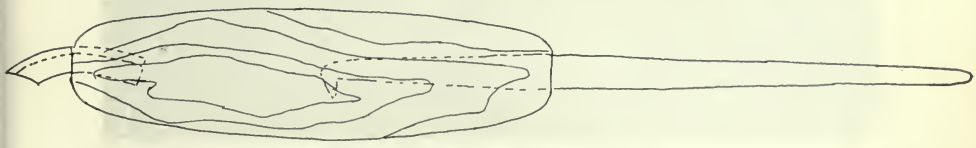


FIGURE 62 — FEATURE 45
Drawing of Hafted Awl

quantity of charred wood was unearthed throughout the fill, especially within the 26"-30" levels. This would be good dating material, but the pit produced no artifacts or skeletal material. It cannot be determined whether this was a burial pit in which the bones had disappeared, a refuse pit, or a fire pit.

FEATURE 48 – REFUSE PIT

Feature 48 first appeared at a depth of 36" beneath the surface. At this point fragments of charcoal and fire-cracked rock were observed. This continued down to a depth of 63" where stratified sand was uncovered. No bone material, no ocher, and very little organic material was found. The bot-

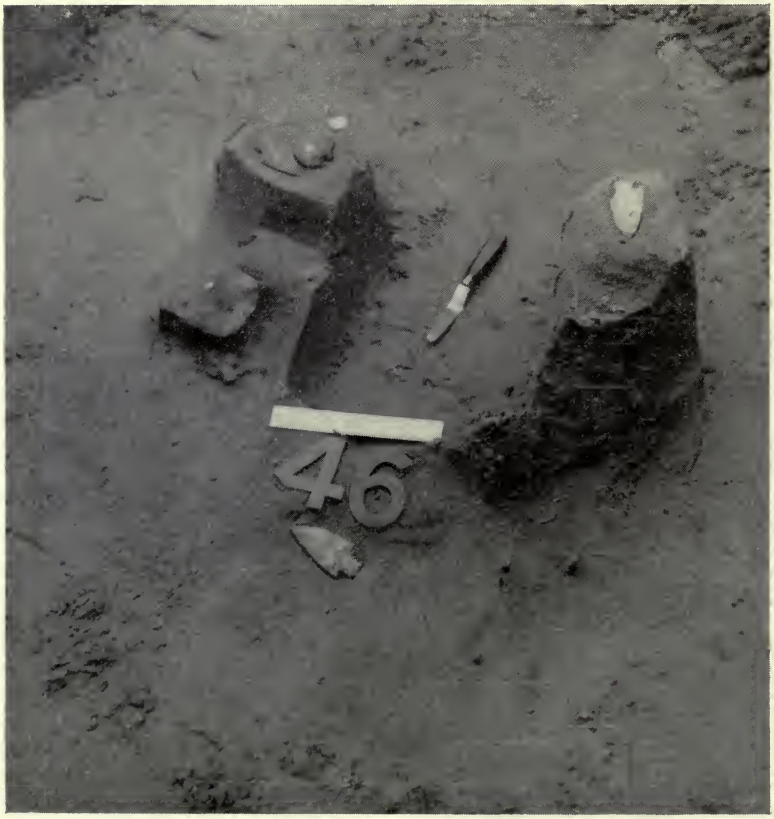


FIGURE 63 — FEATURE 46
Points & Limestone in Situ

tom of the pit was approximately 40" in diameter. It could not be determined whether this was a burial or refuse pit; however, the latter seems more likely.

FEATURE 49 – BURIAL PIT

Feature 49 started to appear at a depth of 34". Occasional charcoal deposits seem to be the result of vertical posts which were burned in place. Ocher is very much in evidence. At a depth of 52" the pit had narrowed to a very irregular cut-

FIGURE 64 — FEATURE 46
Projectile Points

line, 60" at its greatest width, and by 59" in depth, it had disappeared without a trace of bone or single artifact. A large charcoal sample was retained. This feature is hard to interpret. From all indications it was a burial pit with red ocher and posts; however, all traces of human remains have disappeared.

FEATURE 50 – BURIAL PIT?

Feature 50 was a lense-shaped concentration of red ocher occurring 14" below the surface. No organic material, bone, or flint was present. The outline was very indistinct.

FEATURE 51 – BURIAL PIT

At a depth of 13" the entire pit, actually a ring of charcoal with sand enclosed and some red ocher along its western exterior margin, was exposed. This pit with an occasional fire-cracked rock was followed down to a depth of 45", at which point it disappeared. A 2¼" copper needle with a broken base, uncovered within the pit fill at 17", was the only artifact in this feature. A few flint flakes showing work were also discovered. Ocher was present throughout the fill. The pit was approximately 50" in diameter. No organic material was saved; no bone was found. This might be an ocher burial that had been opened up many years ago and then refilled, possibly shortly after the burial had taken place.

FEATURE 52 – BURIAL PIT

Feature 52 first appeared at a depth of 18". At this point red ocher was visible. At 20" two long human bones appeared. These were portions of femur lying parallel to each other in a north and south direction. Scraps of poorly preserved, unidentifiable bone were abundant near the long bones, but none was preserved. It seems likely that this was a primary burial, possibly partly flexed since the distance of 26" separated the teeth and the closest point of the long bones. No artifacts or flint flakes were associated with the burial. The teeth were to the north end of the pit, which was approximately 24" by 60". No organic material and no artifacts were found. The bones are obviously those of an adult. One individual is represented here.

FEATURE 53 – BURIAL PIT

Feature 53 first made its appearance at a depth of 20" at which point red ocher was visible. This pit was followed

down to a depth of 30" where fragments of long bone appeared in the approximate center of a long narrow pit. The pit at this point was 30" by 72". In the extreme southern end of this pit tooth enamel was visible. This represents the burial of one adult individual, probably in a flexed position. Red ocher was apparent throughout the grave. Small fragments of copper were discovered in the fill. No organic material was uncovered. At the extreme north end of the pit two large unworked diabased rocks were unearthed.

FEATURE 54 – BURIAL PIT

Feature 54 occurred between 34" and 39" in depth from the surface. The pit was approximately 30" by 40". A small portion of a right mandible was found. Some, though not all, upper and lower teeth, in their proper anatomical order were represented. The mandible was lying on its right side so that the lowest teeth were the best preserved. Only three teeth from the left side were salvaged. One adult is represented here. No red ocher was found. A few copper fragments were obtained from the fill. No organic material was present. Whether this was a flexed or bundle burial cannot be determined.

FEATURE 55 – BURIAL PIT

Feature 55 occurred at a depth of 42" - 52 from the surface. The pit diameter was 48". Red ocher was present from the 42" level downward. At 52" fragments of human teeth were noticed, but it was impossible to save them. Directly below them stratified sand was reached. This represents a burial of one adult, as determined by the size and condition of the teeth. Again, we do not know if this was a flexed or bundle burial. No artifacts or organic material was uncovered, but red ocher was present.

FEATURE 56 – BURIAL PIT

Charcoal fragments first started to appear at 21" beneath the surface. At 22" red ocher was apparent. At 26" human tooth enamel appeared, and 6" to the west, three beaver teeth and two small pieces of quartz were found. Just to the north of the ocher, but still within the black discoloration, a stemmed projectile point wsa found. This point was badly broken, both the base and the tip were missing. While troweling the floor of the feature at a 27" level, a 1¼" fragment

of copper awl was found. It was not noticed until it had been troweled from its place so its exact location is unknown, although it is definitely from the floor of this pit. Both human and beaver teeth were removed intact. Associated with the three beaver teeth were a flint flake and five small pieces of quartz. Two of these incisors were still in place in the fragments of the lower jaw. The third, located directly above this, represents a complete skull and could be part of a food offering or medicine bag which included the quartz flakes. No other organic material was collected from this feature.

FIGURE 65 — FEATURE 57
Hearth

The pit diameter was approximately 36". These are the remains of one individual, an adolescent. It could not be determined whether this was a flexed or bundle burial.

FEATURE 57 – HEARTH

Feature 57 was a concentration of fire-cracked rocks at a depth of 4". It extended to a depth of 12" and was approximately 30" in diameter. While the rocks were being removed, very tiny fragments of calcined bone and red ocher became evident. The bone, however, is much too small to be identified. This perhaps could be a cooking pit or a fireplace (Fig. 65).

FEATURE 58 – BURIAL PIT

Feature 58 was a red ocher discoloration from 22" - 27" in depth from the surface. No bones were uncovered and the ocher concentration was fairly heavy. The pit was 18" at its widest diameter. One fragment of copper and one projectile point (R 663 & R 664) were obtained from the fill.

FEATURE 59 – BURIAL PIT

Feature 59 was a light concentration of ocher from 27" - 37" beneath the surface. It was 12" by 18" in diameter. Very tiny fragments of unidentifiable bone, probably human, were found in the ocher. This would account for one individual.

FEATURE 60 – BURIAL PIT

Feature 60 started to appear at a depth of 36". At this point red ocher was visible. The pit continued down to a depth of 49" showing signs of ocher and charcoal staining. At 49" the pit was 29" x 33". Only one fragment of bone was discovered and this was human. No organic material was saved. No artifacts of any kind accompanied this burial. One individual is represented here.

FEATURE 61 – REFUSE PIT

Feature 61 was a pit starting to show at a depth of 29". It was followed down to 70" beneath the surface at which point it was 24" in diameter. No red ocher, charcoal, or artifacts of any kind were discovered within this pit. It seems probable that this was a storage pit or perhaps a refuse pit. There was no organic or bone material present.

FEATURE 62 – REFUSE PIT

Feature 62 was a small accumulation of pieces of limestone and charcoal fragments between 14" - 18" from the surface.

No pit outline could be discovered. The area of disturbance was approximately 30" in diameter. The only artifacts recovered were a fragmentary copper awl and one unworked flake of flint. No red ocher was present. This represents either a fire or refuse pit.

FEATURE 63 – BURIAL PIT

Feature 63 first came into appearance when, at a depth of 28" beneath the surface, red ocher began to appear. Within the red ocher twelve flakes showing signs of use were uncovered. These lay in a compact bundle covering an area of about 2½". The ocher was most dense about ½" below these flakes. After the ocher was penetrated for about ½", flint blades were discovered (Fig. 66). A piece of unworked granite lying directly above them at 27" was removed to expose them. At 30" the entire burial cache was exposed. Fragments of tooth enamel were the only portions of the burial yet visible. The pit at this stage was 22" north and

FIGURE 66 — FEATURE 63
Artifacts and Tooth Enamel in Situ

south by 14" east and west. The teeth appear to be those of a child. These are in the northern portion of the pit. At a depth of 32", the red ocher faded and disappeared, and stratified sand started to appear. There was a total of 110 blades (R899-R1007), mostly ovate although at least two were tanged and two had stems with corner notching (Fig. 67-68). It will be noted in the field photograph that the blades were placed on the prepared ocher bed in a very precise manner, the burial being placed over them. Their position shows definite placement, but what the pattern represents could be interpreted in many ways. No other bone or charcoal was found. The orientation seems to be roughly north-south since the teeth were at the northern extremity of the ocher, and the north-south dimensions of the pit were longer. Complete lack of charcoal and calcined bone indicated that Feature 63 was probably not a cremation, but either a primary or secondary burial, most likely primary.

FEATURE 64 – REFUSE PIT

Feature 64 was first noticed at a depth of 40" below the surface when fragments of bone, recognizable as sturgeon and turtle, started to appear. A large copper fragment was among them at a depth of 41". One-half inch directly beneath the piece of copper was a piece of turtle bone, green in color. It conforms in size almost exactly to that of the copper. A small chert flake was also uncovered from within the disturbed area. The great variety of material in Feature 64 suggested that it may have been a refuse pit. Beneath the turtle bone fragment was sterile sand. It does seem odd, however, that a piece of copper this large should find its way into a refuse pit.

FEATURE 65 – REFUSE PIT

Feature 65 was discovered at the depth of 35". It was followed down to 64" where two beaver incisors were uncovered. This was the only identifiable material in this disturbed area. These teeth were removed intact. From their position in the ground it was noted that they must have been in the skull when buried. At 67" no sign of the disturbance was apparent, and stratified sand was visible. No copper, ocher, or artifacts of any kind were found in this feature.

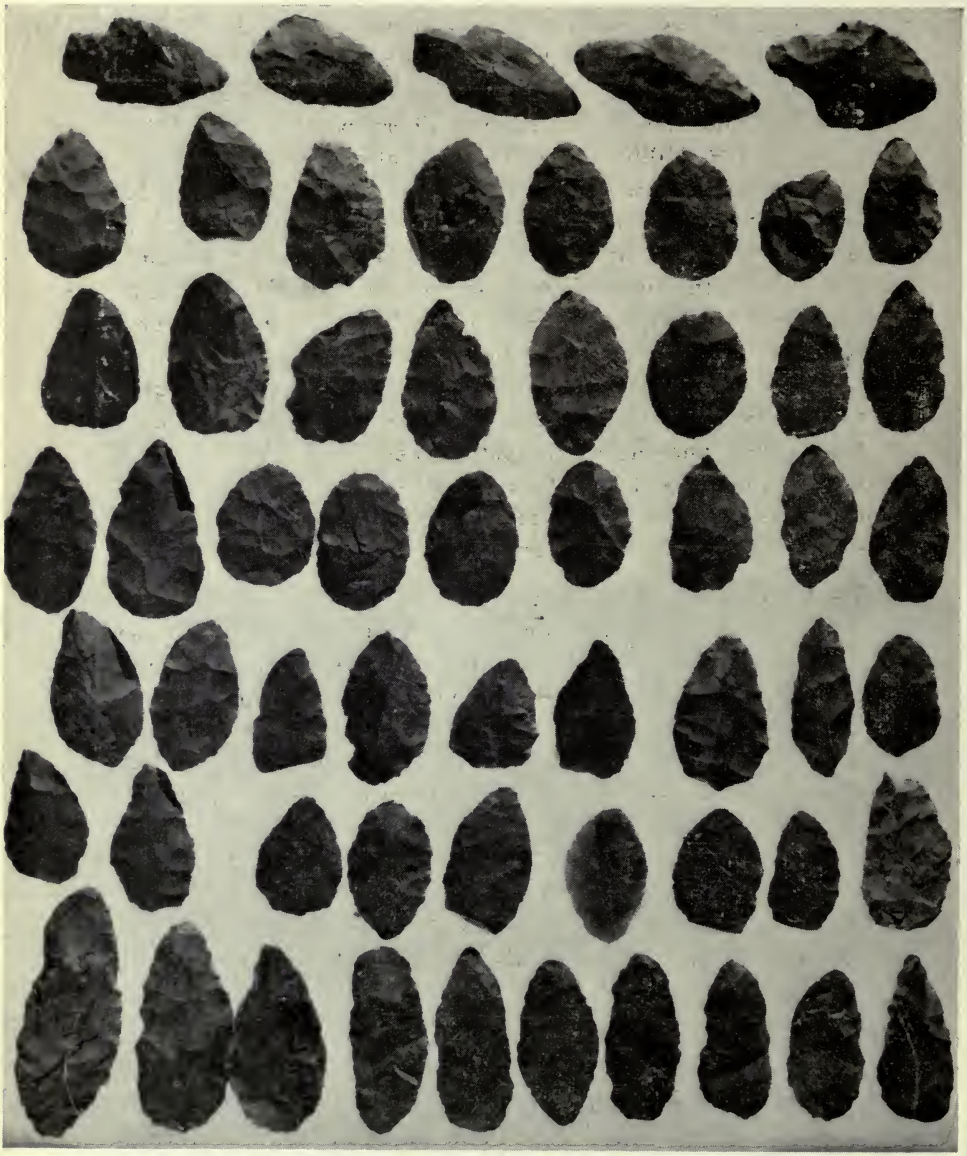


FIGURE 67 — FEATURE 63
Artifacts

FIGURE 68 — FEATURE 63
Artifacts

FEATURE 66 – BURIAL PIT

Feature 66 was a salvage operation performed to preserve certain portions of a burial which had been disturbed by the cemetery workers removing fill. When first discovered, it was an area of cremated bones which were weathering out of a sand slide. These had all been removed from their original context. There were approximately 160 gms. of bone, some identifiable as human, but much of it showing the characteristic pattern of sturgeon bones. One small piece of copper (seemingly a portion of a socketed point) was recovered in the same area, but its association could not be assured. The depth or pit diameter of this feature could not be discerned. Probably one individual is represented here.

FEATURE 67 – BURIAL PIT

Feature 67 was first noticed when at a depth of 12" an area of sand, stained with ocher, was discovered. The ocher was found to contain small fragments of cremated bone, weighing approximately 19 gms. The diameter of the pit bottom was 15" x 16". Red ocher was present. Several flint chips and one broken artifact were found in the fill of the pit and were not thought to be directly associated with the burial, i. e., they were not intentionally grave offerings. Probably one individual is represented here.

FEATURE 68 – BURIAL PIT

Feature 68 appeared at a depth of 10". An area of charcoal stains and dark brown sand was visible. At its widest point, it was 24" in diameter. It was of very irregular outline, with the heaviest concentration of charcoal in the center. At a depth of 31", small crumbly fragments of unburned cranium were found. They were recognizable as the internal auditory meatus and surrounding temporal bone. This is the remains of one adult. Charcoal, fire-cracked stone, and flint fragments were common throughout the fill of this pit. No artifacts of either copper or flint accompanied them. Ocher was present. It was assumed that this was a flexed burial because of the presence of a clavicle directly under the skull fragments.

FEATURE 69 – BURIAL PIT

Feature 69 was discovered at a depth of 17" when a very vague pit outline started to appear. Within the pit outline,

and immediately around it, fragments of calcined bones were uncovered. Some were identifiable as human, others as sturgeon. Occasional calcined bones were discovered throughout the fill, including one which had been stained green from contact with copper. Red ocher was also apparent throughout the fill. At a depth of 23" a bundle re-burial was found. This was the remains of one individual, a female, and was represented by fragmentary long bones (portions of the pelvis and one portion of humerus). A broken stone artifact was discovered in the fill, but was not thought to be associated with the burial. At 26" the pit gave way to stratified sand. Two individuals are probably represented here: the female bundle burial and the fragments of one other individual represented by partly cremated bones. The diameter of this pit was 48".

FEATURE 70 – REFUSE PIT

Feature 70 was a pit, first discovered at a depth of 14" and traced to a depth of 39". It was approximately 28" in diameter at the bottom. This pit was filled with disturbed sand. Smears of red ocher and one fish bone were uncovered. It cannot be determined what this pit represented.

FEATURE 71 – REFUSE PIT

Feature 71 first started to appear at a depth of 24". It was traced to a depth of 51" at which point it was 36" in diameter. In all probability this feature was a refuse pit as the only materials discovered were bones (very tiny, charred, unidentifiable fragments), a fragment of copper (possibly representing a tip of an awl), and a few quartzite and flint chips. This does not represent a burial. Red ocher was not present.

FEATURE 72 – REFUSE PIT

Feature 72 first started to appear at a depth of 17½". At 32", a few bone fragments and flint chips appeared. Excavation ceased when, at 46", stratified sand appeared. This pit was approximately 36" in diameter. No artifacts or red ocher were recovered from this pit. Only small unidentifiable fragments of charred bone were evident.

FEATURE 73 – BURIAL PIT

Feature 73 first started to appear as an ocher smear at a depth of 22". At 29½", minute, crumbly flakes of calcined bone were recovered. At this depth, the disturbance had

localized into a pit outline with the ocher on the westernmost edge. Fragments of tooth enamel were found at this point. Enough of one molar was recovered to make definite the identification of at least one adult. At 35", the pit outline was quite definite, and small flakes of charcoal were observed. The red ocher disappeared at the 39" depth, and at this point, two post molds were apparent. The feature was troweled down until it disappeared at a depth of 46". One adult individual is represented here.

FEATURE 74 – BURIAL PIT

Feature 74 appeared as an ocher stain at a depth of 28" - 29". At 33" the red ocher had localized into a roughly circular area, 16" x 13", with tooth fragments in the center. The teeth were later identified as being from an adult. By 36" the pit had completely disappeared. Red ocher was present only in the area of the teeth.

FEATURE 75 – REFUSE PIT

Feature 75 first showed at a depth of 27" and was traced to a depth of 46" at which point it was approximately 36" in diameter. Several flint flakes, a few unworked stones, and several teeth (white-tailed deer) were recovered from the fill. No red ocher, no stone or copper artifacts, and no organic material was evident.

FEATURE 76

This discoloration at a depth of 15" disappeared after being troweled down less than 2". No material of any kind was recovered.

FEATURE 77 – BURIAL PIT

Feature 77 first started to appear at a depth of 19". At 25" very small flakes of tooth enamel were found. These were in such a condition that it was impossible to tell whether they were from an adult or adolescent; however, they were human. Large quantities of red ocher were also discovered at this point. At the level at which the teeth were found, the pit measured 50" north/south by 36" east/west. The red ocher was followed down to a depth of 35" with nothing more being discovered. At 40", stratified sand was reached, and the pit had disappeared. Red ocher was present, but no organic material and no stone or copper artifacts of any type were evident. This was a burial of which all traces of the

remains, with the exception of the teeth, had completely disappeared.

FEATURE 78 – REFUSE PIT

Feature 78 first appeared at 23" and was traced to 30", at which point it was 30" x 50". No human remains were recovered, but small portions of bone, recognizable as sturgeon, and, in one case turtle, were recovered throughout the fill. Also found were one slightly used hammerstone and a small fragment of worked copper which could not be identified as an artifact. Very little organic material was present. This is considered to be a refuse pit.

FEATURE 79 – REFUSE PIT

Feature 79 was a disturbance, first noticed at 58" and traced to stratified sand at 69"; at the bottom, it was approximately 30" in diameter. No human remains were discovered in this pit, but throughout the pitfill small calcined bones occurred, and in many cases were identified as sturgeon bones. No red ocher or artifacts of any kind and very little organic material was evident.

FEATURE 80 – BURIAL PIT

The pit outline for Feature 80 was first noticed when a block of unworked limestone was removed from a depth of 24". Directly below this at a depth of 27" - 31", a bundle reburial was uncovered. This was the remains of one individual, an adolescent, which had supernumerary teeth of both upper and lower jaws in the area of the premolars. The bone is in a fairly good state of preservation, but it is badly broken, and much seems to be missing. The skulls was placed partially upturned directly on top of the long bones and was facing north/northwest.

No red ocher was present. No artifacts of any kind or any organic material was recovered. At the level of the bundle reburial, no pit outline could be discovered.

The Burial Complex

This section will deal with the burial pits and their contents which are believed to represent a single component: a transitional culture incorporating elements from Old Copper and Red Ocher, and falling into the Late Archaic horizon (500 to 1 B. C.).

BURIAL PITS

The burial pits varied in depth from as shallow as 26" to as deep as 144", with burial or grave goods included in pits of all sizes. In the shaft of one pit (F 30) which extended to a depth of 12', a bundle reburial was recovered. This pit was first noted at a depth of 55". In every case where the walls could be clearly traced, they were nearly vertical, and the floors were quite flat. The deeper of the pits almost always exhibited traces of poles which had supported either the walls or a roof. In each instance, these poles had been burned before or at the time the grave was filled. Other features may have contained similar poles, but without the action of fire and charring, nothing would be preserved.

BONE PRESRVATION

Bone preservation on the site was affected by at least three variable factors — 1) the age of the individual, 2) the drainage, and 3) the amount of copper in direct contact with the organic material. In reference to the first factor, it was noted that whenever children's remains were found, all that could be positively identified was the enamel of the teeth. In most cases, everything else was completely disintegrated. In reference to the second factor, in certain of the flexed burials containing little or no copper some portions of the burial were in much better condition than others. In one feature (F 41), where the foot bones were in an excellent state of preservation and the skull was quite solid, we were able to remove these intact; but between the neck vertebrae and the upper portion of the femur, nothing whatsoever could be seen, much less preserved. In this case the center of the pit was probably more porous than the edges near the head and feet, thus allowing water to percolate through more rapidly, effectively removing the calcium from the bone and leaving only a very spongy organic material which disappeared quite rapidly. It was also noted that skulls tended to be better preserved than the other portions of the same material. This is probably caused by the cranium forming a watershed until it becomes quite porous. Then the lower portion of the skull acts as a bowl and retains the moisture. In almost every case, the lower portions of the skull were in much better condition than the upper portions.

The third factor is the amount of copper on the burial. Whenever fairly large portions of copper are in direct contact with organic material, preservation is excellent. This is shown very clearly in some of the burial packets (F 29)). In these burial packets, bark, fabric, and the strings within the copper beads were in an excellent state of preservation, and were actually flexible while still damp. Such preservation was also apparent in a burial in which large copper awls had been laid in the pelvic region of the burial (F 45). The pelvis, several vertebrae, and the sacrum were stained a bright green, and were in excellent condition. However, the rest of the burial had almost completely disappeared with the exception of the lower portion of the skull. The copper salts had preserved even the wooden handles on the awls or flaking tools, to the extent that a beaver tooth (set in the base of one) was still in place, clearly visible, and removed intact.

Burial Methods

BUNDLE BURIALS

A number of bundle reburials were discovered (F 12, F 30). In each case these represented adults.

FLEXED BURIALS

Flexed burials at the site included at least one male (F 32), three adolescents (F 36, F 37, F 13), and a number of females (F 27, F 41, F 19).

PARTIAL CREMATION IN SITU

In one instance (F 30), partial cremation took place within the burial pit itself. In all other cases, however, the bones had been burned elsewhere to varying degrees and had been placed in the burial pit with very little evidence of charcoal. Partial cremation was by far the most common type burial on the site. Definite indentification has been made on both female and adolescent individuals. The features which had been burned elsewhere before being placed in the ground showed wide variation in the heat of the fire and the length of time they were subject to heat. In some cases the bones were calcified and warped but in fairly stable condition. In other cases, the bones were turned more to charcoal and would crumble upon touch.

COMBINATIONS OF BURIAL TECHNIQUES

A number of the features showed combinations of several

burial techniques. One included the flexed remains of an adolescent buried directly on top of a large mass of cremated bones (F 37). Another contained a bundled reburial as well as a flexed burial showing the effects of burning in place (F 30). In one instance (F 3), it was noted that a burial had been placed on the burned remains in an unburned condition. In two cases an extra skull was located within the burial pit (F 31, F 45). One was with a flexed burial and the other with a partially dismembered individual. It is impossible to determine whether these extra skulls represented ceremonial burials of parts of individuals or if they were intended to be grave offerings.

PARTIALLY DISMEMBERED BURIALS

One burial of an adult male (F 31) was found to be partially dismembered before burial. Some portions of the hand and several long bones were still in articulate position when burial took place. Other portions of this burial, however, show definite separations and disarticulation before burial.

MULTIPLE STAGE BURIALS

In several instances, burials or grave goods were discovered before reaching the bottom of the pit. In each case, upon following the pit deeper, remains of one or more burials or grave goods would be discovered on the pit floor.

STONE COVERED BURIALS

One burial (F 32) had large pieces of unworked limestone lying directly on the burial. The stones were placed in such a way as to completely shield and hide the bone material. This was not a stone-capped grave in the usual sense, as the stones were placed directly on the body or bodies. Grave goods represented here included a copper crescent, a copper point, and large quantities of red ocher. This was a multiple burial, one body flexed and buried directly on top of cremated remains. Also present was enough tooth enamel to represent one other individual, a child.

Stone Artifacts

CHIPPED-STONE BURIAL BLADES

These blades are all obviously too large to be used as projectile points. They would, however, serve as knives or spears. There is also the possibility that they are unfinished, i. e., at a future date, they were to have bases fashioned on

them. It is also possible that they were made for purely ceremonial purposes.

Their general shape is double-pointed and leaf-shaped. Some of the bases are slightly rounded. They seem to fall into several categories. The most common is long, narrow, and double pointed. A second type seems to be slightly broader, and a third exhibits traces of flaking on one side at about the mid-point of the blade. This is always pressure-flaked on one side only, producing sort of a spokeshave or shaft scraper. Basal grinding is sometimes apparent on both ends. In most cases, the white outer core of the flint nodule can still be seen on the tip or tips of the blades. Almost all edges of the blades from F 30 show a dulling or grinding. Whether this was done intentionally or through use cannot be determined. Several of the pieces also exhibit small areas of pressure-flaking performed after the grinding had taken place. In every instance of this, the flakes had been removed by pressure exerted on one side only. Also, many of the blades have small polished areas which could only have been caused by abrasion or rubbing together in a bag or container. In each instance the burial caches show signs of individual workmanship, and the blades show slight differences. Except for size, the blades all have the same general appearance. An occasional blade will show more than one area pressure retouched from one side, such as a shaft smoother or spokeshave. In one instance (R 29), one entire cutting edge has been broken off and lost. This breakage was caused by a blow near the tip of the blade. Attempted corrections of this are evident. Flaking was attempted at different points along the fracture, but in each case, it would hinge out. An occasional blade (e. g., R 87) shows small fossils in its formation. Crinoid stems are visible and recognizable. Also, some spieces of small shell are visible. Whenever notches are cut into the blades in a deep, well-formed manner, they occur in the center of the blade rather than closer to the ends. These blades also exhibit slightly more grinding on both ends than do the others. Blades showing this characteristic of notching occurred in one instance only, in F 29. Of the types of blades showing signs of hafting, one is of the modified turkey-tail variety, and another has a rectangular

shaped stem with a somewhat square base. A third variety, represented by one piece only, is much larger (approximately nine inches in length by two and one half inches in width). This has a pronounced curve and twist to it. It exhibits no grinding on the tip and very little near the base. This was originally a double pointed, leaf-shaped blade in which the base was retouched, giving sort of a clipped effect. This portion, too, is very sharp.

BURNED BURIAL BLADES

In the fill directly above the burial, several of the features produced large fragments of hornstone blades which had been subject to great heat. These blades were very badly warped, discolored, and checked because of the fire. It was possible to partially reconstruct several of these blades, showing that before being burned, they were hacked at and broken by blows. This then must have been the ceremonial killing of an artifact before burial with the dead. These usually were found directly above the burial in the pitfill. Discovering these, however, gave no indication as to whether other artifacts would be included in the burial itself, or whether these would also have been broken. On occasion, these would be the only artifacts included in the feature. At other times, the main portion of the burial cache would be well below them and in perfect condition.

Copper Artifacts

CRESCENTS

In all, three crescents (R-392, R-395, and R-406) were recovered from burials, the first two in a cremation burial and the third with a flexed burial. In both cases, copper "ace-of-spades points" were in direct contact. All three are of the same type with upturned tangs. Portions of wood are still visible showing that hafting was in place at the time of burial. These tools would function much the same as the ulu of the Eskimo.

ACE OF SPADES POINTS

Five "ace-of-spade points" (R-391, R-388, R-394, R-389, R-407), recovered from the same two features which produced crescents, proved to be of a very uniform size and pattern. The first four from Feature 21 show no signs of hafting, and their random placement leads one to believe that

they were placed in the ground in a bag or container. The fifth point (R-407), however, from Feature 32 shows very clearly the imprint of wood on the tang, the grain of the wood being parallel to the long axis of the point and rounded very nicely where it supports the base of the blade. Its position in the burial pit would indicate a shaft of less than 30" in length. Perhaps this is a type of knife rather than a projectile point or thrusting implement.

PIKES

Feature 27 produced a very large awl or pike (R-37). It is rectangular in cross section, tapered to a fine point on one end, and rounded on the base. When found, it was covered with a piece of leather or skin, only the tip being exposed. No stitching was visible to indicate whether this was a case or sheath so it is more than likely that what we have is a fold of garment preserved by contact with copper salts. No evidence of wood was seen so it seems likely that it was used as we now see it: as a piercing implement.

BEADS

Type I, globular, almost round, and quite heavy.

Type II, small, narrow, tubular type.

Type III large, irregular, poorly shaped.

The round globular beads, Type I, are quite finely made, almost perfect spheres. When found in their original position, these are strung in the usual manner, i. e., placed close together on string or twine, actually touching one another. A second method was discovered in the burial packet of Feature 29 in which the fiber was braided in the three-strand way, and one bead was added each time a braiding knot was completed. In this way, the beads are spaced approximately ⅛ inch apart. This would tend to make a string of beads seem longer than it really was. In the case of Type II, which are the small, tubular beads, these are always quite thin and, when found **in situ**, are in parallel rows, i. e., the sides of the beads touch rather than the ends. Type III is the irregularly shaped copper beads which tend to be somewhat elongated. In one case, a complete necklace of this type of bead was discovered, and the beads were graduated by size with the largest and heaviest being in the center, and the sizes tapering from there to the smaller ones on the ends. No mixing of

bead types was observed. One other type of bead was uncovered, this from Feature 3. This fourth type of bead was again of the globular type but very thin, almost like seed beads. As these were found mixed in a cremation burial, the method of application could not be discovered.

HAFTED COPPER ARTIFACTS

Feature 32 produced two copper artifacts (R406, R407), one crescent and one "ace-of-spades" type copper point. Both show evidence of having been buried while the hafting or handles were still in place. Very little could be learned from the copper point other than that the shaft was mounted parallel to the long axis of the point. The type of wood of the shaft could not be identified, but resembled either birch or maple. A portion of the handle of the copper crescent, however, was better preserved. In this instance, very small fragments of wood were actually preserved upon the tangs of the crescent, and a vague outline was visible in the soil, showing that the haft had been in the shape of a crotch — the extreme end of each fork coming in contact with the tangs of the artifact. Here again, it seems that either birch or maple was used. A sketch was made of the existing portions of handle, but none could be preserved. (Another case of hafting is discussed under the heading "Beaver Teeth"). One copper awl (R483), which was not recovered from a burial but rather from the general village midden, still has traces of fiber wrapped around the more pointed end. This was probably used to keep the awl firmly in place when inserted in a wood or bone handle, no traces of which remained.

BEAVER TEETH

In two instances, Feature 21 and Feature 45, the larger incisor teeth of beaver were recovered from the burials, having been included as burial offerings. In Feature 21, where eight copper artifacts, four "ace-of-spades" points, two awls, and two crescents were found with a compact bundle of partially cremated human bones, beaver incisors were recognizable but could not be preserved. In this case, there were approximately six of the teeth in direct contact with the copper and the cremated bones. The teeth, however, like the copper artifacts, did not show signs of heat or fire. No artificial alteration could be discovered upon them. In feature 45 directly

upon the pelvis of a flexed burial, two copper awls complete with wooden handles were found. The smaller of the two (R1018) was quite badly corroded, and it was impossible to preserve more than some very small bits of the handle. R1019, however, was in a much better state of preservation, the handle being about nine cm. in length and two cm. in diameter before drying. This was a wooden handle, but the wood could not be identified. A beaver incisor had been inserted in the end of the handle opposite the copper awl with approximately 1½ cm. protruding from the wood. Upon drying this handle, the wood shrunk quite a lot, and the tooth was removed for positive identification. Feature 65, a refuse pit, produced two beaver incisors still in anatomical position, indicating that they had been in the jaw when buried. From the teeth recovered from Feature 45 it can be safely assumed that, in at least some cases, the beaver incisors were hafted with a wooden handle. These would make very serviceable chisels or gouges. Because of the poor state of preservation at this site, it seems likely that others may have been included in the burial caches but had completely disappeared because of the lack of copper.

Animal Remains

Animal remains recovered on this site in direct contact with the features included the jaws of a white-tailed deer, uncovered a few inches above the burial on Feature 37. These have been discussed elsewhere, as have the beaver teeth found in Feature 21. In Feature 31 two moose teeth were recovered in direct association with the burial, one tooth on either side of the skull. Their position indicated use as ear ornaments. These have been identified as moose incisors.

The Village Complex

A considerable number of artifacts not associated with burials were found. Designated here as "Village Materials", they were scattered in the fill between and often above the burials. Some of this material, especially the copper, probably belongs to the Late Archaic culture represented by the Burial Complex, but the pottery and certain lithic materials are diagnostic of later cultures such as Woodland and Mississippian.

Copper Artifacts

SOCKETED COPPER POINTS

Only one soceketed point was recovered from the site, and this was from the village material 18" beneath the surface. It is small and quite poorly made, with a very thick blade. The blade does not exhibit either a bayonet ridge or beveled edge. It is very dull on the sides, and there is some indication that it is unfinished. The socket is fairly well formed, however, with a hole near the extreme end for fastening to the shaft. This hole shows evidence of having been punched through from the outside of the piece. This piece (R1312) is seven cms. long (Fig. 69).

CONICAL COPPER POINTS

Small copper projectile points, commonly referred to as conical points, were found throughout the excavation, but always with the village material (Fig. 70): none occurring within the feature. Of the twenty-one points recovered, several show evidence of not having been completed, in which case the socket is not too fully formed. These vary in length from 1½ to 5 cms. in length. The shorter ones, however, seem to be the remains of the larger variety in which portions of the socket had weathered away and oxidized. In most cases the socket is open on one side and extends nearly to the tip of the piece. In one case, however, the socket was completely closed and formed by the overlapping of the thin copper side walls. None these exhibit holes, rivets, or hafting pins.

COPPER CELT

One well preserved copper celt (R368) was discovered in the village debris (Fig. 69). It is 9 cms. in length and nearly 4 cms. in width. It is rectangular, cross-sectioned, and has a slightly flaring bit. This piece also shows the effects of folding.

COPPER CRESCENTS

One small unusual piece (R1142) recovered from the village material can only be described as a very tiny tanged crescent, approximately 2½ cms. in diameter, its outline being almost circular (Fig. 69). Two large tangs have been brought up from the extremities and bent towards each other until they almost meet. The lower edge is still quite sharp.

FEATURE 69 **Village Material. Copper Artifacts**

FIGURE 70
Village Material — Conical Copper Points

COPPER AWLS

Copper awls recovered from the village debris vary in length from 2½ cms. to 9½ cms. (Fig. 69). In almost every instance, they are either square or rectangular and cross-sectioned, usually having a fine point on one end. Most of these show evidence that the copper was folded several times before it was pounded into an elongated mass.

COPPER NEEDLES

Three pieces (R658, R237, R425), obviously copper needles, were recovered from the village fill (Fig. 69). One (R658) is a small (5 cms. in length), round, badly oxidized piece of copper. The larger end, which has been broken, shows traces of once having had an eye, i. e., the end is slightly split. Another (R237), which is obviously an unfinished piece, has been flattened at one extremity in preparation for the piercing of an eye. The only one in good condition (R425) is a round, finely finished needle, complete with an eye. This piece is 5 cms. long. The eye is elongated and well made and the opposite end is still very sharp.

COPPER FISH HOOKS

Six copper fish hooks were recovered from the site, three of which are quite small and of the common straight-stemmed variety (Fig. 69). The fourth is so fragmented as to make impossible any identification of the stem type. R327 is a tiny straight-stemmed fish hook which has an incised line or groove cut around the extreme end of the stem to secure the line. R327 is an unusual piece, being rather square, and cross-sectioned with an incurving base similar to some modern fish hooks. This is a definite fish hook type for the site. Others that have been recovered and now in private collections are almost exact duplicates of this. The size of the fish hooks indicates that they were used for fishing with bait rather than attached to a pole and used as a gaff or snag hook.

COPPER HARPOONS

The specimens discovered on the site, again in the village material, showed definite evidence of use as toggle-head harpoon points (Fig. 71). One, which seems to be a conical point, upon closer examination shows a groove fashioned around the center of the point (R343). This piece is bent

directly across from the groove to facilitate the fastening of a line at this point. After being thrust into a fish, strong pressure and pull would cause the point to bend directly at the groove. Another conical point (R623) has one elongated barb and a square hole through the point slightly forward from the center. This hole is much too far forward to serve as a rivet hole. The last specimen (R548) is similar to the previous one with one barb elongated and a square hole through the point approximately in the center. Still preserved in the hole is a small portion of twisted fiber which was the original line. From the large portions of sturgeon bone throughout the site, we know that these people relied very heavily on fish, especially sturgeon, for their food. The spearing of fish in the hundred-pound class is almost impossible with the rigid-handle spear, and as no large gaff hooks were recovered, these points would be one of the few ways in which they could

FIGURE 71
Village Material. Copper Toggle Head Harpoons.

consistently kill and land large fish. The function of a harpoon, or toggle-head harpoon, is thus: the point is loosely attached to the end of a shaft, and a line is secured through the hole. After thrusting it into the fish, the shaft is immediately withdrawn, and the first tug on the line turns the point or blade crossways in the flesh. Then the fish is played on the line very much as a person would on a hand line. Fish speared in such a way that the point enters the body cavity die very quickly and are landed with very little trouble. Sturgeon in the Menominee River at the present time are known to exceed 100 pounds.

COPPER BEADS

Of the four copper beads recovered from village areas, two (R340, R634) are of the irregular, tubular type. R342 is an elongated tube made of very thin sheet copper. The fourth, R616, is of the globular type, commonly found in the burials. It is exceptionally well made (Fig. 69).

COPPER FRAGMENTS

Worked copper fragments were numerous throughout the site and varied greatly in size and shape. Some were quite large, as much as 4½ by 6 cms. Others were reduced to the point where only small flecks of green oxidation could be discovered. Several of the larger pieces exhibit very little sign of working. They are just irregular masses in which poor rock was removed before the piece was hammered into a shapeless form. It is clear that many of the smaller ones are portions of conical points, needles, awls, etc., in which portions have been completely oxidized, leaving fragments too small for definite identification.

UNCLASSIFIED COPPER ARTIFACTS

One large, flat, conical point (R1027), open down one side with an extremely large tang or bar extending up through the back, was found (Fig. 69). At this time, its use cannot be determined, although it seems possible that it is a partly finished point of the "ace-of-spades" variety.

Village Materials: Stone Artifacts

TRIANGULAR POINTS

Only 16 points of the triangular type, commonly attributed to late Woodland and Mississippian Cultures, were recovered from the site, and these were always in the village areas,

FIGURE 72

Village Material. Stone, Bone, and Antler.

never in the features (Fig. 72).

FRACTURED BASE POINTS

Of the stone materials recovered from the village site, a number of points (R157, R628, R2401, R2240, R720) are obviously of the same type as found in Feature 46. They all exhibit a semi-triangular blade portion, a flat stem in which the base of the stem has been left unfinished, i. e., a fractured base type (Fig. 73, lower row).

SIDE-NOTCHED OR OSCEOLA TYPE POINTS

Four fragments recovered from the site seemingly represent side notched or Osceola type points. One specimen (R1199) is a side-notched point with a straight base made of a poor quality chert. Another (R220) is a piece of similar material, side-notched with a slightly concave base. R659 is the base of a side-notched chert point with a straight base. R252 and R267 represent the base portions only of what are seemingly side-notched points or blades. One is concave, and the other is straight based. All these specimens are broken and have portions missing (Fig. 72).

DRILLS

Drills recovered on the site included one completely finished specimen from a core (R 2447) and two partial drills (R 1334, 3 201), one of dark material with a slightly expanded base and one drill tip too small to identify as to type. A partially finished and broken drill tip of a poor quality chert (R 2029) was also recovered (Fig. 72).

SHARPENING STONES

One sharpening stone (R234), recovered from the village material, is of fine, close-grained hematite. It is quite flat with one concave surface. The sides exhibit signs of wear or polishing, and the concave surface has a slight groove worn in it caused by an abrading action (Fig. 72).

FOREIGN OR IMPORTED MATERIALS

A number of articles recovered were fabricated of chalcedony, which commonly occurs in North and South Dakota. This is the material commonly called Knife River flint (Fig. 72). These items are as follows:

one portion of blade (R2267)
one small, side-notched projectile point (R166)
one small, side-notched projectile point (R160)

FIGURE 73 Village Material. Stone.

one wide-stemmed projectile point (R405)

two scrapers (snub-nose) which are very similar (R1886, R1998).

PECKED AND POLISHED IMPLEMENTS

Only two portions of pecked and polished implements were recovered from the site. These are very small portions of the cutting edge of celts or grooved axes. Too little of one specimen (R 1025) is represented to make a positive identification as to type. The second (R 2173) is a flake of fine grained stone, possibly hematite, which shows wear over the entire surface.

BANNER STONES

The one banner stone found on this site, probably in the fill of the burial, is made of very fine grained stone and is well-polished. It is of the winged variety and had been broken and reworked. Where the wing had been damaged, it was repolished and one end (i. e., the end where the hole is) which had been broken off was also slightly repolished. The hole was bored with amazing accuracy. It is slightly over ½" in diameter and in 2½" depth it tapers .037". The hole is slightly eccentric and cross-sectioned and varies from .008 - .016" out-of-round. A hole of this accuracy must certainly have been drilled slightly smaller and then lapped with a round object such as a stick and sand in order to attain this nearly perfect bore. It is very smooth on the interior (Fig. 54-55).

BONE AND ANTLER ARTIFACTS

No bone or antler artifacts were recovered from any of the features. The only items in this class appearing on the site were found mixed with the general village material. In each of the four cases they owe their presence to being partially burned or calcified (R-897, R-1302, R-1137, R-2627). One consists of a small fragment of calcified bone, showing line engraving or etching. No determination as to representation could be made due to the small size of the fragment. It is a rounded portion of a long bone, and the back shows artificial flattening. Two others consist of very small portions of bone awls or pointed bone implements broken at the base end. The fourth is a small portion of an antler tip which was found out of context in the upper portions or village layer of the site.

FIGURE 74
Village Area. Pottery.

It cannot be determined whether this piece has been altered or not (Fig. 72).

POTTERY

No pottery from the Riverside Site was found in association with any of the burials. All sherds recovered came either from the village area or were scattered throughout the burial area (Fig. 74). A very small percentage of this pottery was shell-tempered with the bulk of it being grit and an occasional sherd of sand-tempered appearance. A quick evaluation discloses that there are a number of pieces closely resembling Black Sand or Dana Incised. Also, at least one pot with a castilated rim, attributed to Transitional Woodland, was recovered. Several rim sherds, obviously from the same vessel. exhibit the characteristic angles and points commonly found on the vessels of the Transitional Woodland period. These are tempered with a very fine grit, are quite thin, and show very good workmanship. The rim exhibits two parallel lines (approximately one inch apart) marked with cord and cross-hatching between them. There is also the impression of a cord around the inside of the lip about one-quarter of an inch from the top. The upper portion of the lip has a slightly notched pattern. From the fragments available, it is impossible to determine the number of angles or the size of this vessel. Many of the sherds are very small and delaminated. This is attributed to their location between 12 to 18 inches directly below the sod line, which exposed them to severe frost damage. Very few, if any, of the pots are restorable. The rim portions of several exhibit an outward flaring to the sides with no constriction or neck. These are bowl shaped. In most cases of cord-wrapped paddle impression, punctate designs are found approximately one inch below the rim, pressed in from the outside to the point where bosses can be seen on the interior. One sherd exhibits roulette ornamentation.

One pot of small size, approximately seven to nine inches in diameter with a round bottom and slightly constricted around the neck, exhibits punctate designs on the outside, ¾ inch beneath its slightly flared rim. The entire exterior of the pot has been treated with a cord wrapped paddle. Upon this, horizontal lines were inscribed around the upper four inches,

FIGURE 75
Village Area. General Sampling of Stone Artifacts.

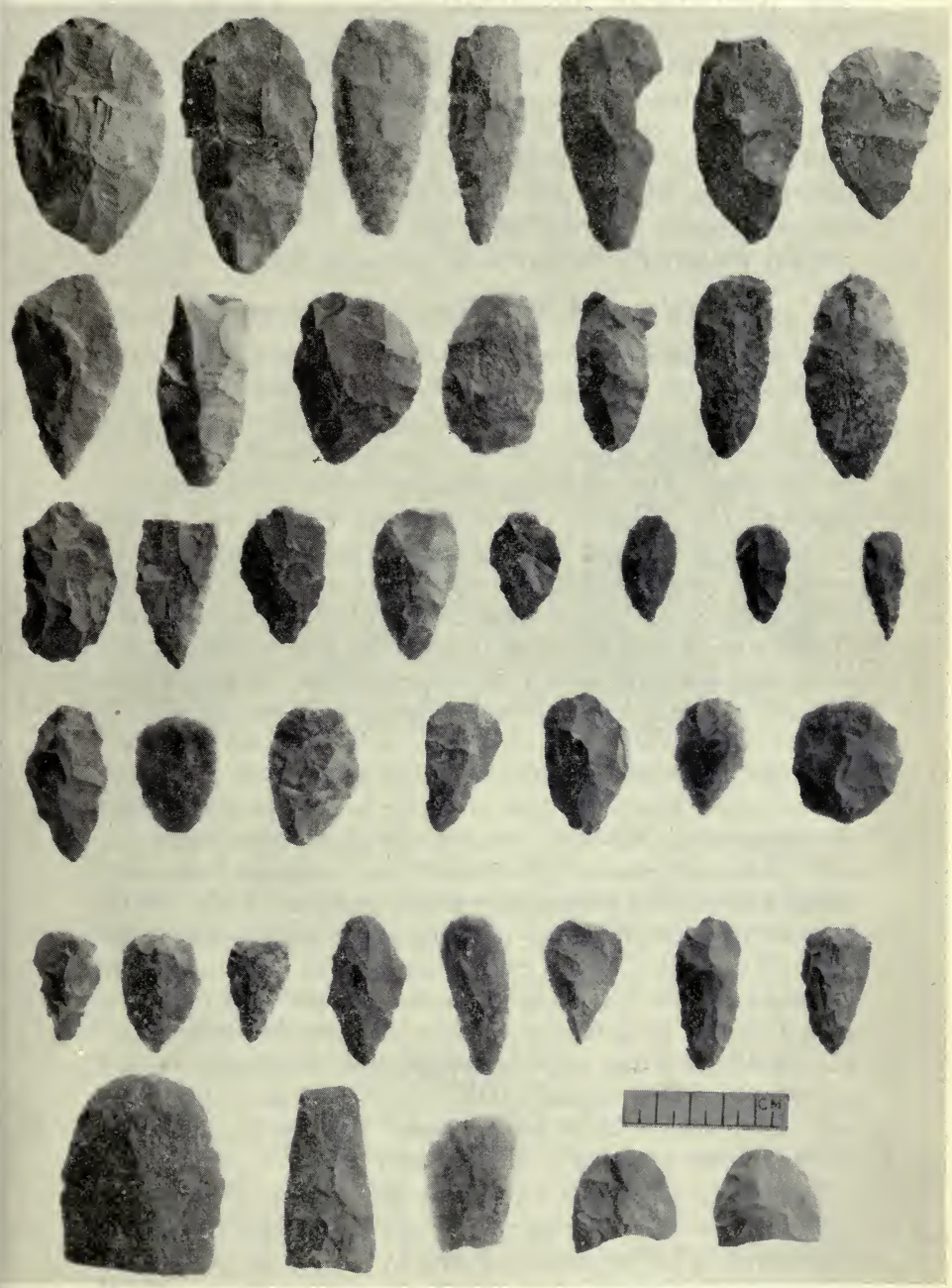


FIGURE 76
Village Area. General Sampling of Stone Artifacts.

the cord marks showing plainly beneath them. Directly below these horizontal lines, which are about one-quarter of an inch apart, is a chevron design which is also incised over the cord wrapping. The top of the lip shows signs of treatment with the edge of a cord wrapped paddle. There are fingernail impressions directly below the flare of the lip. This pot was tempered with very large pieces of grit.

Evidence of More Recent Occupation

A catlinite ear spool was recovered 2" below the surface of the soil in the north portion of the site. This is of the kind commonly attritubed to the Mississippian cultures. It shows tool marks which seem to be left by a metal knife rather than by grinding. One tinkling cone was also recovered at a depth of 16". This is clearly historic material and is cut from a sheet of brass, probably a portion of a kettle. It is quite well preserved with a light patina and still shows the original marks (R1042). Three musket balls were recovered on the site (R 520, R 579, R 1080). The one which has not been fired is approximately 55 caliber. This is a round ball. The other round ball, which has been fired and shows the impression of hitting wood on one side, is much too flattened to be measured. No. R1080 is a piece of lead, certainly from a musket ball or projectile but unrecognizable as to type or size. All were found in the upper portions of this site. Two portions of glass were also recovered showing signs of retouching for scrapers or accidental use scars. Numbers R2610 and R679 are tinted a slight amber color from age. The smaller of the two exhibits small pressure flakes applied from one side only. This is a portion of a flat glass such as would come from a window or flattened bottle. Number R2610 is a larger piece, obviously from an angular-shaped glass bottle. This, again, exhibits pressure-flaking from one side only. These could be produced intentionally or could be the results of using it as a scraper.

These few artifacts are certainly not enough to constitute a historic or recent occupation of any great extent, and are considered to be the results of loss by people moving across or camping on the site for very short periods of time. In all cases artifacts of this class are found in the portion of the

site above the secondary sod level or in disturbed areas.

Radiocarbon Dates

Dr. Spaulding's 1956 and 1957 dig produced a date of 3,040 B. P. (personal correspondence), the material tested being from a burial which produced copper, stone, and bone artifacts. At this time no charcoal had yet been recovered from the site.

In the 1961 season, organic material in some form of charred wood was obtained from 5 burials. These were submitted for testing, and the results were as follows:

M-1715	1950 + – 130	charcoal 1-A
	A. D. 1	Feature 37
M-1716	2050 + – 140	Charcoal A-4
	100 B. C.	Feature 46
M-1717	2190 + – 140	charred bark A-5
	140 B. C.	Feature 27
M-1718	2180 + – 140	charred wood A-3
	130 B. C.	Feature 30
M-1719	2460 + – 140	charcoal A-2
	510 B. C.	Feature 31

These five dates, while somewhat later than anticipated, are reasonable.

The fact that the 1956 date of 1,000 B. C. was obtained from a test on bone, while the other five dates running from 500 to 1 B. C. were obtained from charred wood and bark may account for the considerable time discrepancy between them.

Radiocarbon dates are through the courtesy of the University of Michigan.

CONCLUSION

The University of Michigan Digs of 1956 and 1957 indicated that Riverside was another cemetery of the Old Copper people, based mainly on the fact that a number of socketed-tang spear points were found, and the general penchant for burial in sand (without mounds) characterizing this culture.

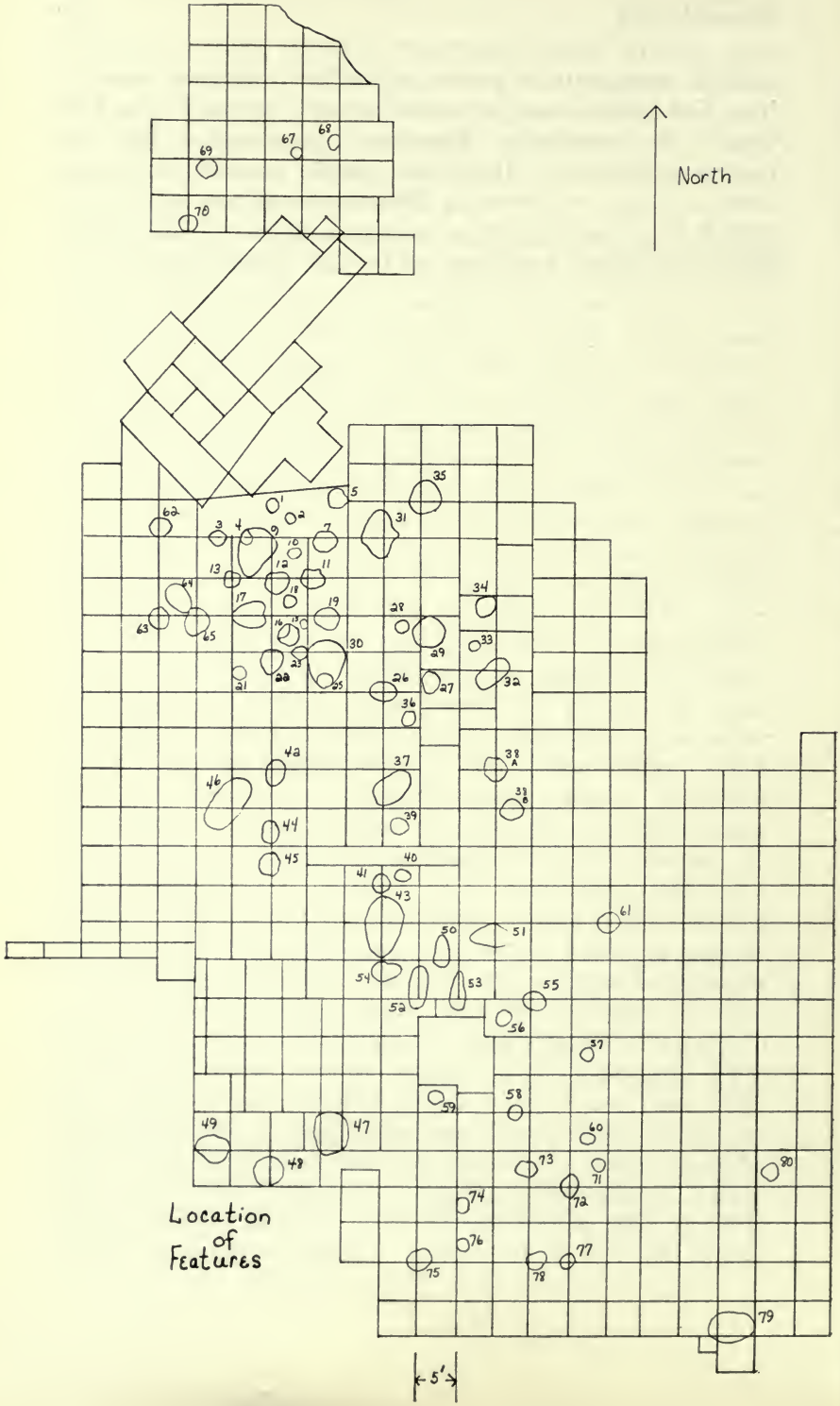
A neat definition of Old Copper Culture has been difficult

because of artifact variation, particularly lithic, existing from one site to another. However, it does seem possible to view as diagnostic of old "classic" Old Copper the following copper items: socketed tang spear points, spuds, crescentic knives, curved-edge knives (Wittry's Type II), rat-tail knives, and conical and serrated-tang points.

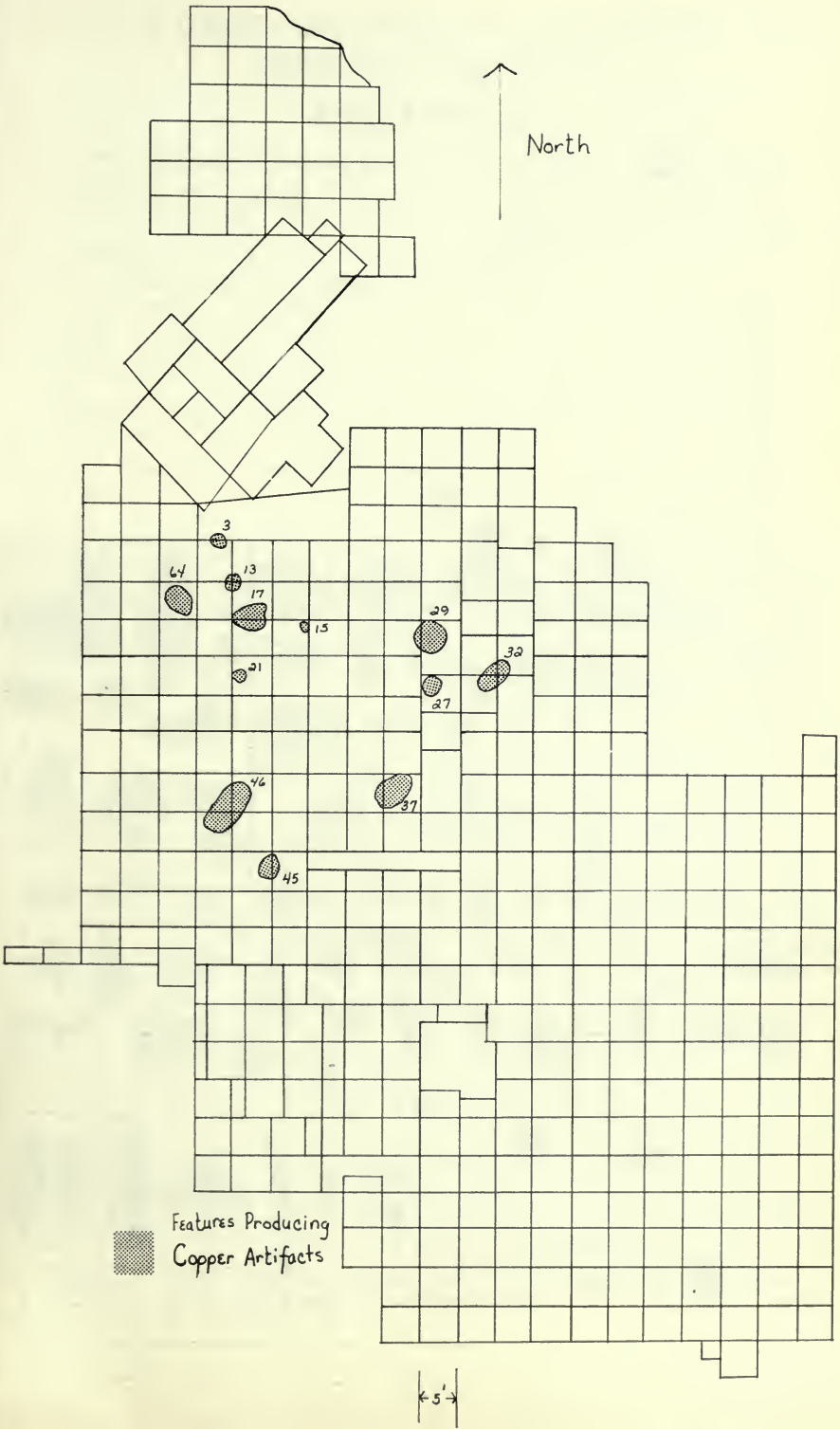
The Oshkosh Public Museum - Milwaukee Public Museum Digs of 1961, 1962, 1963 also produced "diagnostic" Old Copper tools including more socketed-tang points and three crescentic knives. Also recovered were such copper items as rolled beads, wedges or celts, and square in cross-section awls all of which usually occur at Old Copper sites. but which also may persist into later horizons and therefore not real reliable as horizon markers, or cultural determinants. As work progressed the preliminary identification of the site as Old Copper was challenged by the appearance of elements suggestive of the later Red Ocher culture. Most important among these were the large caches of hornstone blades. While the shapes of these varied from the classic Red Ocher types of the use of hornstone, the type and quality of workmanship, and their placement as caches strongly suggest Red Ocher. While the Old Copper people sometimes placed red ocher with a burial, the large amounts and consistent use of ocher by the Riverside people points to Red Ocher culture. Such evidence leads to two possible interpretations. Riverside could represent a multi-component site with both Old Copper and Red Ocher peoples having made use of the cemetery as discrete populations. However, the remarkable consistency in burial pattern, and the intermingling of Red Ocher and Old Copper traits within the same burial pit are strong arguments for viewing it as a single component site occupied by a people in the process of merging from Old Copper culture into Red Ocher. Seven radiocarbon dates which cluster between 200 and 500 B. C. lends temporal support to this hypothesis. That Old Copper merges into Red Ocher is not a new idea. "The temporal position of Red Ocher and Glacial Kame lends credence to the thesis that these are transitional culture growths with roots in Old Copper and branches in Woodland." (Ritzenthaler and Quimby, The Red Ocher Culture, 1962, p. 257).

The conclusion reached is that the Riverside Site burial

complex represents a transitional culture deriving elements from Old Copper and incorporating new elements from Red Ocher. A hypothetical historical reconstruction that we suggest is that of a Red Ocher people migrating from the south and east and entering Wisconsin perhaps as early as 1000 B. C. to merge with, or at least influence, a long established, but fading, population of the Old Copper culture.



Location of Features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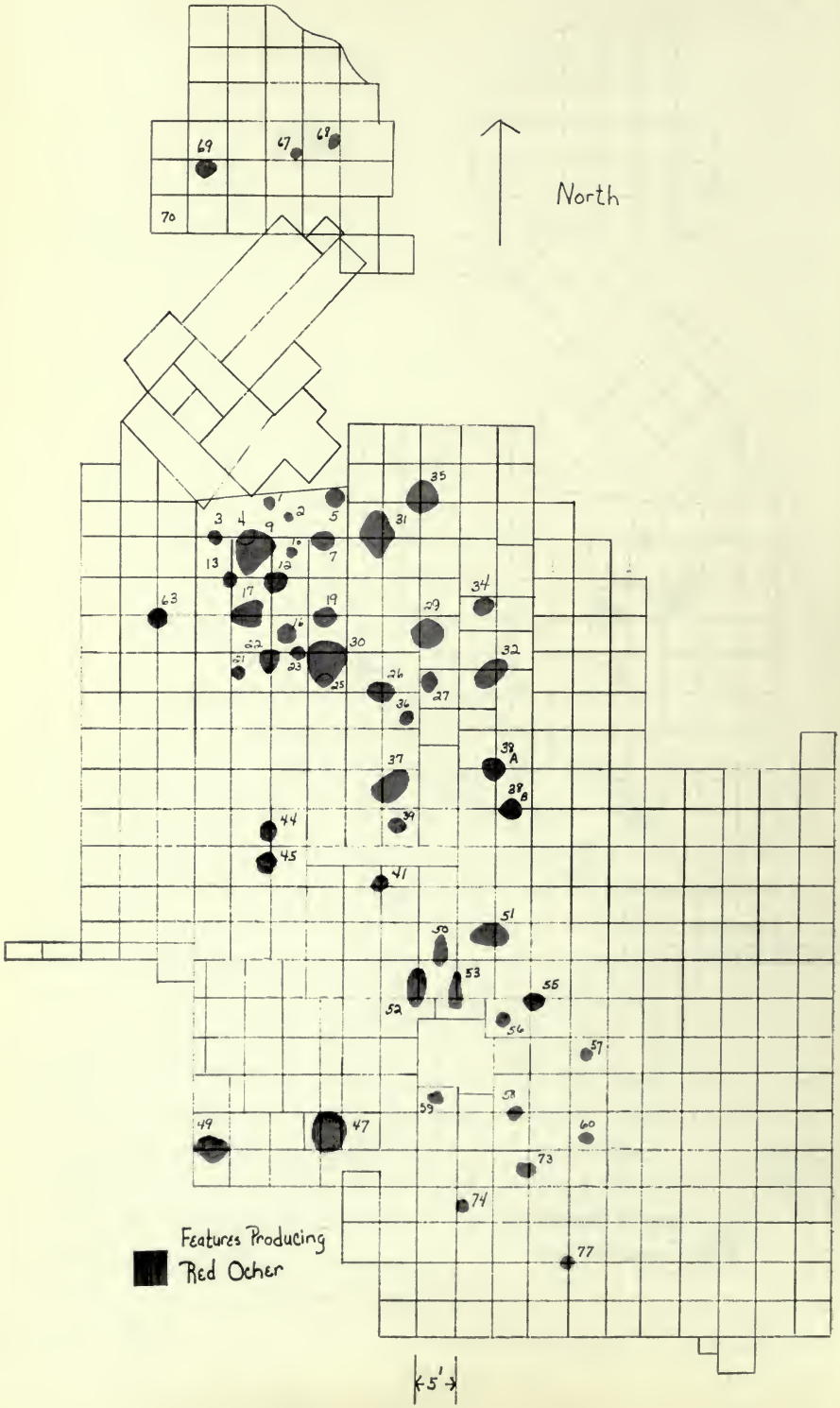
Features Producing
Copper Artifacts
5'


North
Features Producing
Red Ocher
5'

A CACHE OF PALEO-INDIAN GRAVERS FROM THE KOUBA SITE

Robert Ritzenthaler

Mr. Theodore Kouba reports the finding of what may be termed a cache of 87 Paleo-Indian artifacts at the Kouba Site in Dane County. This site has previously produced an important quantity of Paleo-Indian materials as described in the **Wisconsin Archeologist** Vol. 47, No. 4, 1966.

On May 6, 1967 Mr. Kouba inspecting a freshly ploughed area on the site noticed a wad of earth estimated at 4 x 3 x 2 inches in size which had been turned up intact by the plough, and to which could be seen clinging several pieces of chert. Closer inspection showed that they were gravers and removing these more were apparent. One after another, separated by very thin layers of earth, was "peeled" from

FIG. 1. Cache from the Kouba Site. Eighty graves, and (lower) seven knives and scrapers.

the wad revealing a total of 87 specimens (Fig. 1). Of these, 80 were gravers, many with multiple tips, five were scrapers, and two were flake knives. The compact placement of them suggests that they were originally in a bag or some sort of recepticle. To my knowledge this is the first such Paleo-Indian cache reported.

This increases the total of gravers found at this site to over 300, and causes one to wonder as to what use they were put to have been produced in such a great quantity. Many of these also have been scraping and/or spokeshave edges and while they are assumed to have been used in the working of wood and bone, the nature of the products is not known.

THE BOOKSHELF

By

David A. Baerreis

and

Guest Reviewers

Charles Edward Cleland has published his University of Michigan doctoral dissertation, **The Prehistoric Animal Ecology and Ethnozoology of the Upper Great Lakes Region** (Anthropological Papers, Museum of Anthrpology, University of Michigan, No. 29. Ann Arbor, 1966. 294 pp. $3.00) as one of the latest numbers in a series which contains so much of interest to students of Wisconsin's prehistory. This new publication, growing out of Michigan's Museum of Anthropology research program on the Upper Great Lakes area especially fits this category. Not only is the general theme, the relationship between the prehistoric cultures and their environment, an important one to us but contained in the study are a number of faunal reports from Wisconsin sites. These include a restudy of the faunal remains at the important Raddatz rockshelter in Sauk County excavated by Warren I. Wittry, those of the Mero and Heins Creek sites in Door

County excavated by Ronald J. Mason and materials from the Lasley's Point site in Winnebago County excavated by Richard G. Peske.

While the basic data for Cleland's study are a series of reports on the faunal remains from a number of Upper Great Lake sites, he begins with a general account of the paleoecology of the region beginning at 12,000 B. C. first dividing this into a series of **Periods:** (1) Boreal Woodland Period, 12,000 B. C. - 9,000 B. C.; (2) Boreal Forest Period, 9,000 B. C. - 7,000 B. C.; (3) Pine Forest Period, 7,000 B. C. - A,500 B. C.; and the (4) Oak and Pine Period, 3,500 B. C. to the present. The last period is subdivided into a series of eight episodes: (1) Xerothermic Maximum, 2,300 B. C. - 1,800 B. C.; (2) Cool Episode, 1,300 B. C. - 800 B. C.; (3) Late Archaic Episode, 1,300 B. C. - 800 B. C.; (4) Cool Episode, 800 B. C. - 300 B. C.; (5) Hopewell Episode, 300 B. C. - A. D. 300; (6) Scandic Episode, A. D. 300 - A. D. 800; (7) Neo-Atlantic Episode, A. D. 800 - A. D. 1200; and (8) Protohistoric and Historic Climatic Episodes, A. D. 1200 - A. D. 1700. While perhaps we should feel flattered that some of the names we proposed for these climatic episodes (**The Wisconsin Archeologist,** Vol. 46, No. 4, pp. 203-220) were used we should be more pleased were the rationale for naming them in this fashion accepted rather than the varied use of cultural terms and repetitious "cool episodes". Following the description of these periods and episodes, the ethnozoology ("the study of the relationship between animal species and man within the bounds of particular culture") is presented in terms of the sequence of cultural periods within this time range. It is a study, then, which contains both important data and new interpretations and syntheses in the area of environmental and cultural change.

But while we welcome the new as well as this approximation of the paleoecology of the Great Lakes region, further progress in interpretation can only be made by taking a critical view toward the study and there are points deserving criticism. The study combines the naiveté of the geographer, the charismatic vocabulary of the biologist, and the confused caution of the anthropologist. In considering the past almost the overriding climatic differentiation is cool versus warm,

with even this distinction largely in zonal terms, and hemispherical (or global) homogeneity implied. There is no climatic evidence that changes are of similar magnitude everywhere, or even of the same sign, even in an area as restricted as the Upper Great Lakes area. It is the circulation pattern that changes, with temperature and precipitation patterns responding. This gives rise to varying combinations of temperature and precipitation, in **varying annual sequences.** What does the author mean by a "warmer period"? Year-round temperature? Summer temperature? Only from this oversimplified viewpoint can one understand the author's statement that ". . . it is not clear how this period (the Neo-Atlantic) differed substantially from . . . (the) preceding Scandic period." One need only to consider his own experience in the midwest to know that sometimes the summers are warm and dry and sometimes warm and humid as the circulation patterns change. Bearing this in mind, the sort of difference that differentiates climatic episodes is somewhat more obvious.

Much of the text centers on a discussion of how the "natural regions" varied with time and how they were used by prehistoric people, the natural regions utilized being the "biotic provinces" of the Michigan zoologist and ecologist, Professor Lee R. Dice. How the boundaries of these provinces, illustrated in Figure 1 in the report, were established is not indicated. This is surely an important point for the boundaries do not coincide with those given in Professor Dice's last and major publication on this topic, **The Biotic Provinces of North America** (Ann Arbor, 1943). Cleland, for example, in Figure 1 shows the extreme upper portion of Wisconsin as being in the Canadian Province. Below this, occupying perhaps the remainder of the upper half of the state is a Carolinian - Canadian transition zone with the Illinoian Province occupying the southern half of the state. How does one have a Carolinian - Canadian transition zone between a Canadian and Illinois Province? Dice's map, by contrast, shows the Canadian Province as occupying nearly the entire state with only a small section of the Illinoian Province in the southern portion. Surely it is Dice's boundaries that Cleland had in mind when he speaks

of the Raddatz rockshelter in Wisconsin as being ". . . situated on the southern margin of the present Canadian biotic province" (p. 98) for the statement is meaningless in the light of his own map. Some of the problems involved in the use of such large regions have already been discussed in an earlier issue of THE BOOKSHELF (see the March, 1967 issue of this Journal).

Ironing out of such discrepancies as the one just cited in relation to the Raddatz site, or the dating of the Two Creeks interval at 9,850 B. C. while the subsequent Valders advance is given as before 10,000 B. C. (p. 14), and eliminating the very numerous typographical errors is essential in a book such as this. Failure to have done so shakes one's faith in the quantitative sections of the faunal analyses which are the very heart of the real and lasting contribution of the study. The volume closes with a series of 23 maps that trace the archaeological occurrences of various animals. The 160 sites at which the animals occur are numbered and the appendix given an approximate date and identifying name only. Since some of these names are "A Bog", "Campsite", "Various Sites in York County, Ontario", and "Four preceramic sites in Florida" the complete absence of any bibliographical citations is inexcusable. The "Durtz" Shelter on this list is probably the Durst Shelter in Wisconsin so you can see that the task of identifying the sites may be a fascinating puzzle.

Reid A. Bryson
David A. Baerreis
University of Wisconsin

BOOKS RECEIVED

THE STONE AGE HUNTERS by Graham Clark. McGraw-Hill Book Company, 1967. Price: $5.50.

GODS AND RITUALS. Edited by John Middleton. American Museum Sourcebooks in Anthropology. The Natural History Press, 1967. Price: $2.50 (Paperback).

MAGIC, WITCHCRAFT, AND CURING. Edited by John Middleton. American Museum Sourcebooks in Anthropology. The Natural History Press, 1967. Price: $2.50 (Paperback).

MYTH AND COSMOS. Edited by John Middleton. American Museum Sourcebooks in Anthropology. The Natural History Press, 1967. Price: $2.50 (Paperback).

THE HOME OF THE HEROES THE AEGEAN BEFORE THE GREEKS by Sinclair Hood. McGraw-Hill Book Company, 1967. Price: $5.50.

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Paul A. Turney, Director

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THE NORTH BAY COMPONENT AT THE PORTE DES MORTS SITE, DOOR COUNTY WISCONSIN

by

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Middle Woodland, Late Woodland and Mississipian components were identified in the course of archeological excavations at the Porte des Morts site in northern Door County, Wisconsin. This report deals exclusively with the Middle Woodland component. It represents the most intensive occupation of the site and is a component of the recently defined North Bay Culture first discovered at the stratified Mero site ten miles to the south (Mason 1966). The Late Woodland and Mississippian occupations at the Porte des Morts site will be described in later reports.

The site is on the far northeast coast of the Door Peninsula. Here the Porte des Morts Straits provides one of the principal water routes between Green Bay and Lake Michigan. The shore at the site overlooks the straits to Plum, Detroit, and Washington Islands and provides a view northwestward into the northern waters of Green Bay and eastward out to the expanse of the open lake. The terrain immediately back of the gravel and bedrock shore has an undulating sand dune topography anchored by a continuous cover of secondary forest of mixed coniferous and deciduous trees. In many places there is a relatively heavy undergrowth. The shoreline rises abruptly from the water's edge to an average elevation of about eight to ten feet and then rises to a maximum elevation (atop higher dunes) of twenty to twenty-five feet above lake level (600-605 feet). Most of the site lies east or lakeward of the 600 foot contour. Higher dunes occur west of the site. The whole area is encompassed on the U. S. G. S. Topographical Map (15 minute) Series, Wash-

ington Island Quadrangle.

While the total extent of the site has not been determined, it seems to occupy contiguous areas of the SW ¼ of the SE ¼ of Sec. 33, T. 33 N., R. 29 E., and the NW ¼ and the SW ¼ of the NE¼ of Sec. 4, T. 32 N., R. 29 E. Archaeological materials were found in the small township park immediately south of County Trunk B where that road terminates at the Northport ferry landing. Running more or less parallel to the coast, the site extends southward from the park through the properties of Arni Richter, M. and W. Weborg, and into that of Walter A. Olson. Excavation and test pitting was undertaken on the Weborg and Richter properties with the former receiving most attention. I am deeply indebted to the Weborg family and to Mr. Richter for permission to excavate on their properties.

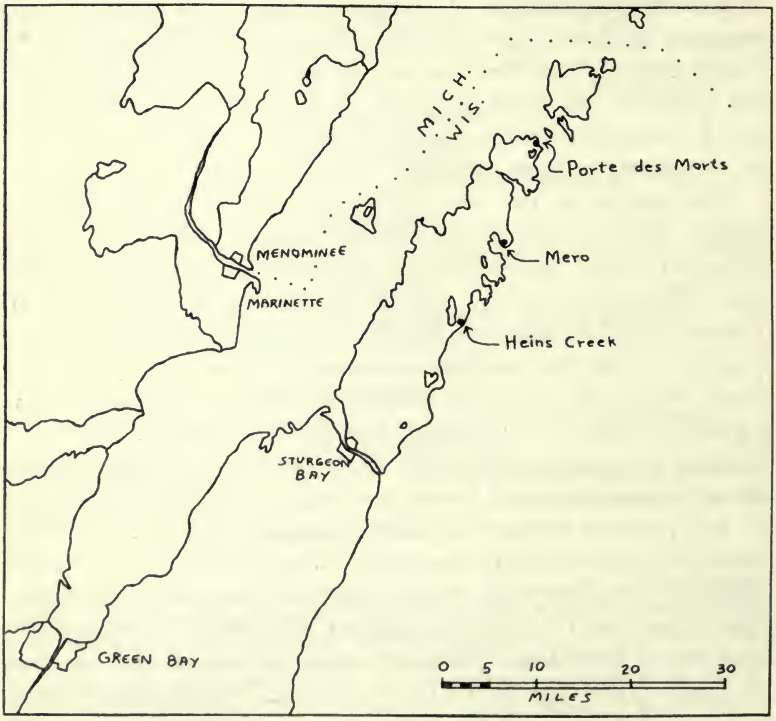


FIG. 1. Locations of the Porte des Morts, Mero and Heins Creek Sites on the Door Peninsula, Wisconsin.

The archaeology of the Porte des Morts site was investigated by a field party from the Neville Public Museum in Green Bay and was under the direction of the writer (at that time a museum staff member) and his wife, Dr. Carol I. Mason. Undertaken in the summer of 1961 under the auspices of the Neville Public Museum, the considerable costs of the expedition were underwritten by Mr. Peter G. S. Mero, who had supported our earlier field work at sites farther south on the Door Peninsula. To Mr. Mero is due my sincere thanks for the work his generous support made possible. I also wish to express my gratitude to James L. Quinn, the museum director, for his moral and logistic support.

Samples of the archaeological material from the Porte des Morts site have been examined by a number of other archaeologists. Drs. James B. Griffin and George I. Quimby were especially generous with their time and provided a number of particularly valuable insights. Errors or other shortcomings are my responsibility, of course. The report focuses on cultural material; a very large collection was made of associated faunal remains which awaits study.

CULTURAL DEPOSITS

The Porte des Morts site proved to be a multi-component one with frequent, if not always undisturbed, physical and typological stratification. The earliest (and heaviest) occupation is a Middle Woodland one representing the North Bay Culture as previously defined at the Mero Site (Mason 1966). The Porte des Morts site has amplified our knowledge of this regional culture and has additionally provided radiocarbon age determination. Late Woodland and Upper Mississippian components were found stratigraphically above the major component with an Upper Mississipian component representing the latest prehistoric occupation.

Test pits (usually 2 by 2 or 3 by 3 feet) gave an indication of the kinds of stratification present and of the relative abundance of artifacts in different parts of the site. Where subsurface conditions were most promising and where density of forest cover permitted, excavation units (X-units) were established and were located on a map by transit and tape. These were given letter designations as opposed to numbers used to

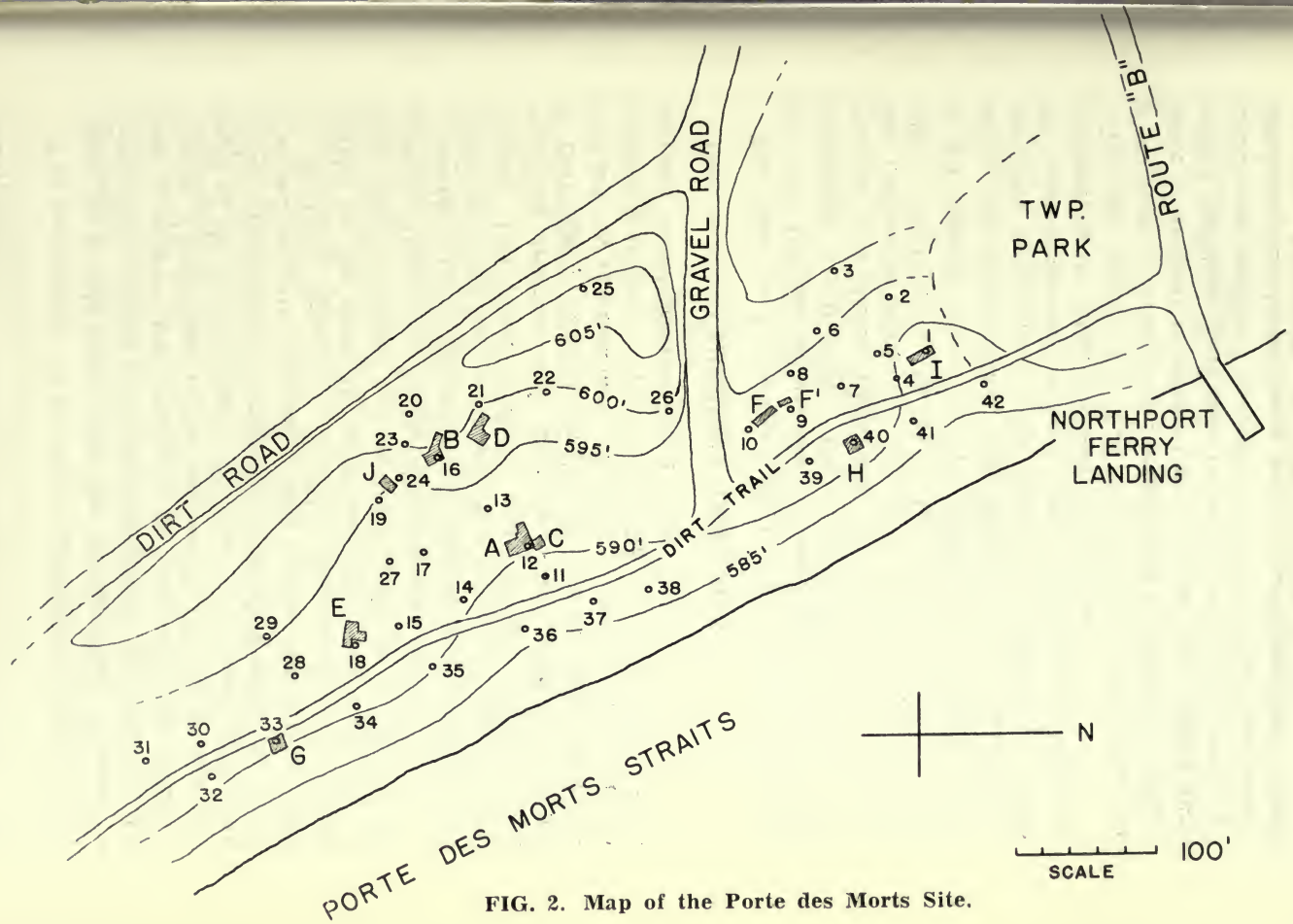


FIG. 2. Map of the Porte des Morts Site.

identify the test pits. Screening tables were employed to insure thorough recovery of cultural debris.

While a few test pits proved sterile, most produced some evidence of Middle Woodland, Late Woodland, and/or Upper Mississippian occupations. A determined effort was made to uncover stratification or midden deposits of sufficient depth to establish directions of change in artifact styles and frequencies. In one area, X-Unit D, stratigraphic evidence was absent or meager, but a heavy concentration of North Bay artifacts made excavation desirable to increase the size, range, and reliability of the North Bay cultural sample. Ample evidence of the relative stratigraphic position of the North Bay Culture was provided by other excavation units as well as by the evidence from the stratified Mero site, where the culture was first defined. Except where digging was minimally rewarded by poor stratification or small artifact samples, the size and configuration of the X-units was largely a function of the difficulties in digging in a forest.

The kind of cultural residue at the Porte des Morts site may best be described as a discontinuous sheet midden which, in some cases, represents accretional accumulation by more than one period of occupation. In a few areas, culturally sterile deposits intervened between the episodes of refuse accumulation thus providing stratigraphic separation. Otherwise, typological stratification was usually discernible in what appeared to be physically homogeneous deposits or there proved to be significant quantitative areal differences relating to different periods of site occupation. Positive and negative concentrations of midden undoubtedly reflect neighboring living areas of the same occupation as well as partial reoccupation of some of the same loci by subsequent residents. Generally, the midden was expressed as a dark gray or even black soil layer with a high content of charcoal flecks, broken or splintered animal bones. fire cracked rocks, chipping debitage, potsherds, and lesser quantities of tools and weapons of stone, bone and copper.

Postmolds were absent — or at least so rare and inconspicuous as to escape detection. Alternative inferences are that originally house structures were lacking entirely or they were of such inconsequential construction as to leave no clear trace.

Nevertheless, a forest environment is hardly ideal for locating postmold patterns.

Present, but only as rare features, were aboriginal pits. These were small, rarely exceeding three feet in diameter and one half to two feet in depth; they almost invariably yielded nothing distinguishable from the general sheet midden content either in quantity or variety. An exception to all of these statements was provided by the discovery and excavation of a large pit in X-Unit D. Two pits were located in this excavation unit. The first and larger of these (Pit 1) was unique for the Porte des Morts site.

Pit 1 in X-Unit D varied in diameter from about four to five feet and was twenty inches deep. It was roughly bowl shaped. The pit had been dug into the basal sands from a level near the bottom of the superincumbent North Bay Midden (straton C) and was definitely not intrusive through it. It was randomly filled with unaltered limestone cobbles, rough blocks of local chert, scattered flakes, splintered animal bones, and an occasional North Bay Sherd. Although there were scattered charcoal flecks in the pit matrix it is clear that that feature was never used as a hearth. A large pocket of exceptionally large deer bones were found just inside the pit at the level of its mouth. Aside from a single mandibular fragment, the only human remains found at the site came from a tight locus near the center of the pit a few inches from the top. The human bones consisted of one whole and six fragmentary ribs; a fragment from the lower left temporal bone; articulating atlas, axis, and third and fourth cervical vertebrae; sternum; the proximal end of the left radius; almost all of the bones of both hands and the left foot; and the talus only from the right foot. This strange assortment was so arranged in a pile that it would not stand intact as excavated and it was quite clear that they must have been in a bag or a basket when placed in the pit. Two small fragments of turtle carapace were associated. This was hardly a burial in the usual sense of that word. The human bones, like the deer remains, suggest simply the disposal of garbage after a feast — in which case, a feast involving cannibalism. The larger bones of the body may have been split up after cooking for marrow extraction and may remain unidentified among the unstudied

mammalian long bone splinters from the general midden. Not far from the pit the anterior half of the lower left mandible of a human being was found unassociated in the North Bay midden.

PHYSICAL STRATIGRAPHY

EXCAVATION UNIT A

Incorporating Test Pit 12, X-Unit A covered about 250 square feet and had a surface elevation of 10 feet above mean lake level or 590 feet above sea level. Physical stratification was generally clear, consisting of a sequence of six strata labeled A through F, beginning at the top (Fig. 3).

Stratum A was a dark gray sandy humus containing heavy leaf mold in its upper portions and was heavily invaded by small rootlets; three to six inches thick, it had a relatively sparse artifact content largely restricted to the gradational zone into stratum B.

Stratum B was a tan colored silty sand four to six inches deep and contained only a few artifacts in the gradational zone described above; in places strata A and B were so intergraded it was not possible to distinguish their exact separation.

Stratum C was darker gray sand about six inches thick and included more artifacts than the two upper strata combined.

Stratum D, four to six inches deep, was a dark tan or brown sand with a decidedly diminished artifact content. Its contact with the lower stratum was sometimes difficult to discern, and in one area the stratum pinched out entirely so that strata C and E seemed to merge.

Stratum E was a very dark gray silty sand averaging six inches in depth and containing great concentration of cultural debris. Even without color differences, it would have been easy to trace this soil member by its unusual compactness; the radiocarbon sample dating the North Bay component came from this deposit.

Stratum F was a culturally sterile tan sand whose bottom was not reached; it presumably overlaid gravel and/or bedrock.

It is believed that Strata C and E are generally like stratum A in that they all represent humus zones. The buried humus zones also relate to episodes of human occupation.

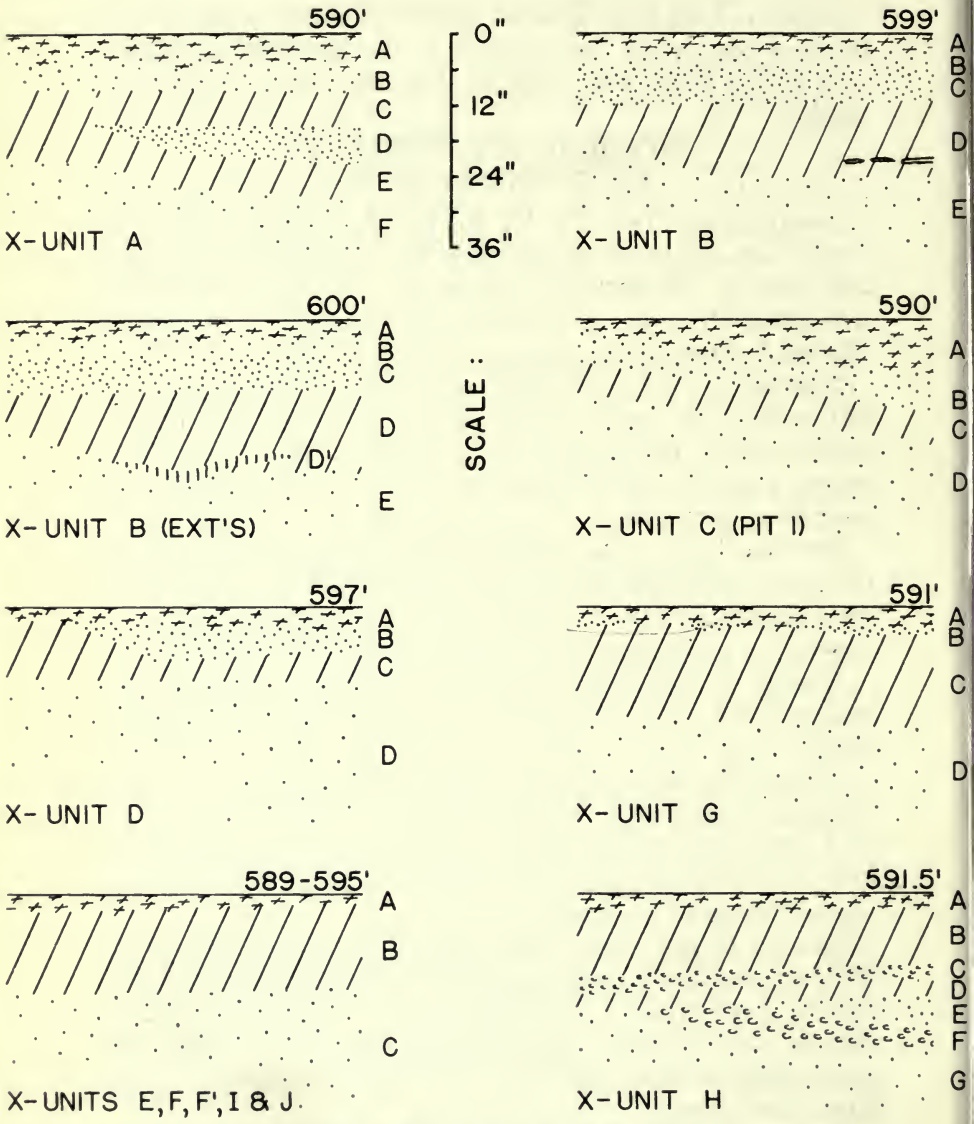


FIG. 3. Excavation Unit Profiles.

EXCAVATION UNIT B

With a mean surface elevation 19 feet above the lake (or approximately 599 feet above sea level) and covering an area of about 125 square feet, X-Unit B exhibited the following stratigraphic profile (Fig. 3):

Strata A and B were as described under X-Unit A with a similar artifact distribution.

Stratum C was a five to six inch thick dark brown or dirty tan sand with an irregular but distinct bottom; it was culturally sterile.

Stratum D was a gray to black, compact sandy soil containing midden and randomly scattered (and mainly limestone) cobbles, slabs and fire-cracked rocks. In common with overlying strata, stratum D was heavily penetrated by roots. Varying from about five to twelve inches, the deposit was excavated in arbitrary three-inch levels wherever sufficiently deep and where interference from rocks and roots was minimal. In a few areas, there was a fugitive level of thin, light sand lenses between the bottom two arbitrary levels whose demarkation was adjusted accordingly.

Stratum E is the correlative of stratum F in X-Unit A and was likewise culturally sterile.

EXCAVATION UNIT B (extensions)

Excavation Unit B (extensions) consisted of a trench excavated in a northwesterly direction from the original locus of X-unit B and encompassed an area of approximately 70 square feet. Its surface was at an altitude of 599 to 600 feet. The stratigraphic profile (Fig. 3) was a duplicate of X-Unit B except for a three-inch layer of yellow clay (D^1) mainly, but not entirely, underlying stratum D and directly overlapping the mouth of a pit in Extension 2. This pit intruded into the culturally sterile basal sands (stratum E) from just a few inches above the bottom of stratum D. Some pockets of clay were found in the pit and there were some thin and discontinuous lenses of clay in stratum E. It would appear that the clay was dug from the pit except that it actually covered parts of its mouth and there was observed no sufficient layers of clay in the pit walls from which it might have been derived.

EXCAVATION UNIT C

This unit comprised two small exploratory trenches adjacent to X-Unit A and at the same elevation (590 feet). The artifact yield was small. In Pit 1 stratum A was a two to ten inch layer of humus intergrading into gray sand (stratum B) which in turn intergraded into stratum C (see Fig. 3). The latter was a gray sand layer approximately five inches deep which rested upon sterile tan sand. Pit 2 was virtually sterile of artifacts and was abandoned after testing. Excavation Unit C was staked out as a ten by ten foot unit; only about half of this was actually dug.

EXCAVATION UNIT D

Embracing an area of 350 square feet at an approximate altitude of 597 feet, this unit consisted of stratum A (a two to four inch sod or humus); B (a three-six inch thick gradational zone between A and C which occasionally pinched out); C (a six-ten inch thick dark gray to black silty sandy layer with a heavy artifact content); and D (basal sands beginning 14-18 inches below the surface and extending to somewhere beneath four and a half feet). Heavy root intrusions made impossible the excavation of stratum C by arbitrary levels and it was removed as uncovered (Fig. 3).

EXCAVATION UNIT G

This revealed a profile like that in X-unit D except that stratum B was only ½ to one inch thick and was even more discontinuous (Fig. 3); furthermore, the differences between strata A, B, and C were frequently vague and impossible to delineate but for restricted areas. X-Unit G was explored in arbitrary four inch levels. Generally, level 0-4" is thought to have corresponded fairly closely with stratum A; level 4-8" with the very bottom of A, all of B (where present) and the very top of C; and levels 8-12", 12-16", and 16" — with stratum C. X-Unit G had a surface elevation of 591 feet and covered 100 square feet.

EXCAVATION UNITS E, F, F[1], I and J

All of these units had virtually identical profiles (see Fig. 3) with a thin surface humus (stratum A) grading into a dark gray silty sand with a heavy artifact content (stratum B). Underlying this was the sterile tan sand (C). Excavated in

arbitrary levels, the top level (0-4") generally included all or most of stratum A while the underlying levels (4-8", 8-12" and 12-16") corresponded almost exclusively with stratum B. X-Unit E had a surface elevation of 592 feet and covered 150 square feet; X-Units F and F[1] were at 593 feet and embraced, respectively, 100 and 50 square feet; X-Unit I was at 589 feet and included 200 square feet; X-Unit J was at 595 feet and covered about 50 square feet.

EXCAVATION UNIT H

Excavation Unit H exhibited the most complex stratigraphy of any of the excavation units (Fig. 3). This consisted of the following:

Stratum A (level 1) was a two to three inch sandy silty humus with a surface elevation of 591.5 feet and was present throughout the 150 square feet of the excavation unit.

Stratum B (level 2) was a ten-twelve inch thick gray to black sandy midden deposit.

Stratum C (level 3) was an approximate two to eight inch thick bed of light gray lacustrine sand, silt and usually fine gravel with occasional cobbles up to 2½ inches thick and eight inches across; both upper and lower limits were very sharp. The stratum pinched out in the west quarter of the X-unit — it could not be followed east of the excavation unit because of extensive tree root disturbance.

Stratum D (level 4) was a gray to black silty sandy midden about three inches thick.

Stratum E (part of level sub-4) was a pebble-free tan sand lens present only in the east half of the unit; it attained a maximum thickness of seven inches.

Stratum F (part of level sub-4) was a three to six inch layer of medium coarse lacustrine gravel, tan in color; it rose slightly in altitude from east to west where, in the west half of the X-Unit, it was truncated by stratum D and there terminated; stratum E was thus wedged between part of F and D.

Stratum G was a 21-38 inch deposit of pale tan sand partly, at least, of lacustrine origin. Running through the middle of this stratum in the east half of the X-unit was a one to three inch deep horizontal layer of medium to heavy gravel. In the west half of the X-unit was an upward sloping deposit (about

½-1 inch thick) of fine gravel emerging out of the basic gravels.

Stratum H was a deposit of large limestone cobbles showing marked water erosion; this presumably rested on bedrock several feet further down.

The artifacts from "Sub-4" are mainly sherds recovered from below the lower midden (stratum D) in the upper parts of strata E, F and G; all of these sherds were light colored and clean as if scrubbed in water or water agitated sand; edge and surface erosion was not conspicuous, however. These sherds could represent the oldest artifacts at the site.

The stratigraphic correlations suggested between and among the excavation units, and as suggested in the foregoing, are presented graphically in Figure 4.

CULTURAL STRATIGRAPHY

Despite variable admixture of culturally heterogeneous materials — a function of natural and human disturbances and not contemporaneity — the Porte des Morts excavations amply confirmed the stratigraphic and typological sequence outlined at the Mero site. The quantities of ceramic and other artifact types and categories and the numbers of test pits and excavation units, as well as the physical strata and arbitrary levels comprised therein, constitute far too many combinations and permutations for publication here. These data are tabulated and are on file with the collections at the Neville Public Museum in Green Bay and in the Department of Anthropology at Lawrence University. To demonstrate the relative stratigraphic behavior of the North Bay, Late Woodland, and Mississippian assemblages, however, tables of ware distributions are given below for those excavation units which afforded both the largest samples and sufficient stratification or depth of midden for internal chronological assessments. The essentially concordant horizontal stratigraphy is reviewed in the section on projectile points.

The pottery types characteristic of the North Bay (Middle Woodland), Late Woodland, and Mississippian components at the Porte des Morts site exhibited relative vertical distributions in conformity with theoretical expectations and with those actually observed at the Mero site.

Wherever these categories of sherds were sufficiently co-

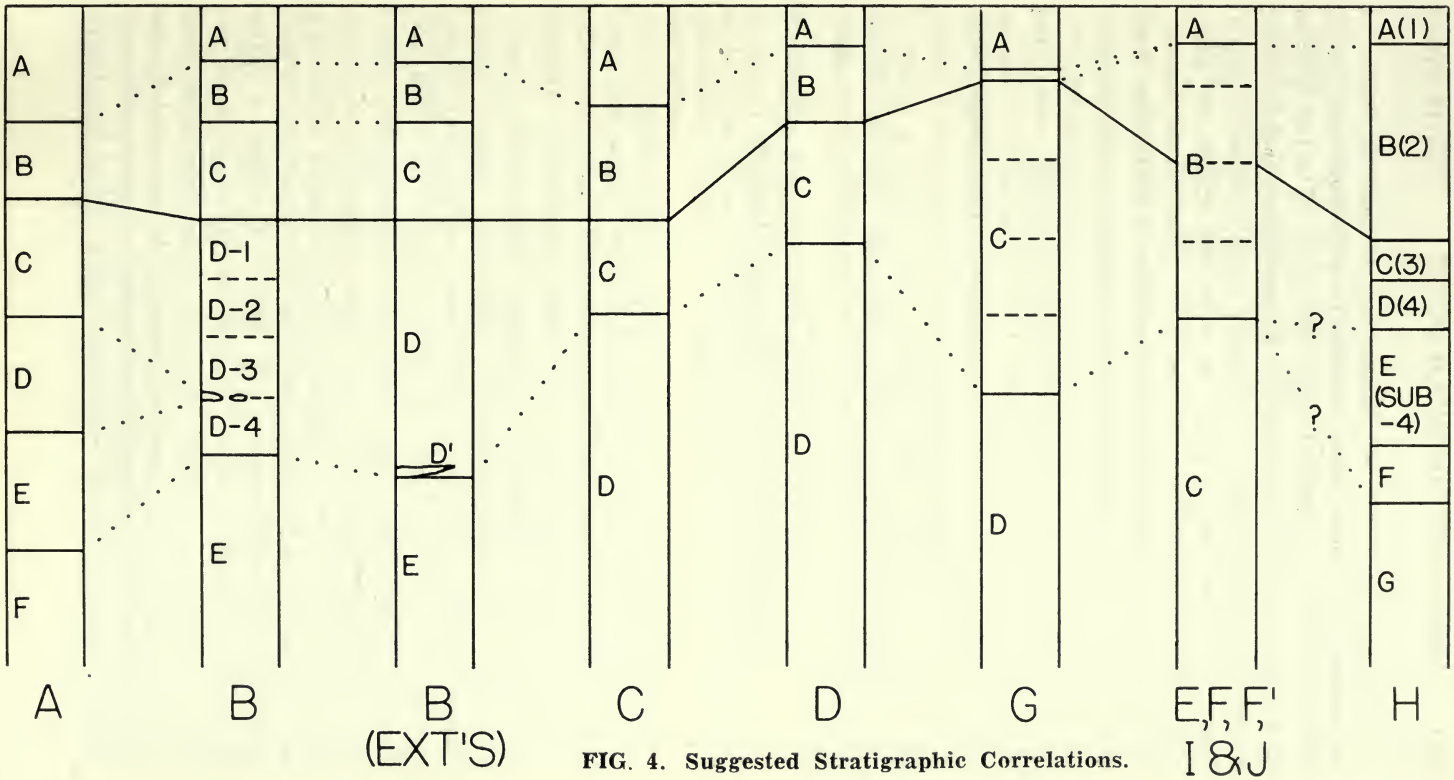


FIG. 4. Suggested Stratigraphic Correlations.

numerous at the Porte des Mortes site to indicate trends in sequences of physical strata or arbitrary excavational levels, the same picture is repeated again and again. The top stratum or arbitrary level is dominated by Mississippian sherds whose relative frequency drops off sharply with increasing depth. Conversely, the bottom strata or arbitrary levels are overwhelmingly dominated by North Bay sherds which drastically decrease in frequency in the upper parts of the site. Late Woodland sherds, presumably intermediate in temporal position, demonstrate intermediate alignment between the two extremes although their greatest frequencies cluster nearer the top of the site than the bottom. The stratigraphic evidence from both physical and arbitrary divisions is thus unequivocal. From early to late the sequence of sherd categories is North Bay, Late Woodland, Missisippian. The following tables of ware distributions document these shifts as recorded in the most productive excavation units. Less productive units show the same sequence without exception.

DESCRIPTION OF THE ARTIFACTS

POTTERY

Unless otherwise noted, the pertinent ceramic complex consists of North Bay ware entirely. Identified types and varieties are described below. The ware itself is characterized by heavy grit tempered with small to very large (up to 18 mm. in size) angular fragments of scattered igneous rock consisting mainly of the ingredients of gabbro and granitic rocks. Temper particles protrude through sherd surfaces and impart a gritty feel to the pottery. By most standards of comparison sherds of North Bay ware are thick and heavy; they range from 5 to 25 mm. thick with an average between 8 and 9 mm. and show liberal representation beyond the mean. The very thickest sherds are from basal sections and these indicate both round and conoidal bottoms. A distinct attribute of many sherds are irregular "lumpy" interior surfaces. Surface fissuring is common on both surfaces. The exterior surface finish is usually plain (only rarely may it be dignified by the adjective smooth); frequent, but much less common, are cord-marked surfaces which sometimes show some secondary

Strata	North Bay No.	North Bay %	Late Woodland No.	Late Woodland %	Mississipian No.	Mississipian %	Unclassifiable No.	Unclassifiable %	Total
A-B	6	20.7	6	20.7	13	44.8	4	13.8	29
C	97	85.8	7	6.2	5	4.4	4	3.5	113
D	44	88.0	..	–	3	6.0	3	6.0	50
D-E	112	94.1	–	–	1	.8	6	5.0	119
E	753	96.4	..	–	1	.1	27	3.4	781
									1092
Excavation Unit A and Test Pit 12 (combined).									
A-B	11	15.7	3	4.3	55	78.5	1	1.4	70
C	–	–		–	–	–	.	–	0
D	1154	94.1	18	1.4	2	.1	52	4.2	1226
Pit	141	97.2	–	–	–	–	4	2.8	145
									1441
Excavation Unit B (extensions).									
1	.	..	3	3.4	85	96.6	–	–	88
2	3	.7	101	23.2	330	76.0	–	–	434
3	14	31.8	21	47.7	8	18.2	1	2.2	44
4	11	68.7	-	–	–	–	5	31.2	16
Sub-4	50	100.0	–	.	–	–	–	–	50
									632
Excavation Unit H and Test Pit 40 (combined)									

TABLE 1. Vertical Frequencies of Sherd Categories by Strata in Excavation Units A, B (extensions), and H. Many of the unclassifiable sherds are almost certainly sloughed North Bay specimens.

Levels	North Bay No.	North Bay %	Late Woodland No.	Late Woodland %	Mississipian No.	Mississipian %	Unclassifiable No.	Unclassifiable %	Total
0-4"	3	4.2	–	–	61	85.9	7	9.8	71
4-8"	41	9.8	10	2.4	330	78.7	38	9.0	419
8-12"	120	61.5	8	4.1	36	18.4	31	15.9	195
12-16"	128	67.7	7	3.7	12	6.3	42	22.2	189
Excavation Unit E.									874
0-4"	19	7.8	19	7.8	165	67.6	41	16.8	244
4-8"	48	10.9	146	33.2	171	38.8	75	17.0	440
8-12"	157	40.7	75	19.5	51	13.2	102	26.5	385
12-16"	149	61.5	22	9.1	13	5.3	58	23.9	242
Excavation Units F and F[1] (Combined)									1311
0-4"	8	1.6	39	7.9	417	84.9	27	5.5	491
4-8"	69	5.5	198	15.7	857	68.1	134	10.6	1258
8-12"	242	25.7	200	21.2	325	34.5	175	18.5	942
12"-16"	298	44.1	114	16.8	183	27.0	81	12.0	776
Excavation Unit I.									3367

TABLE 2. Vertical Frequencies of Sherd Categories by Arbitrary Excavational Levels in Excavation Units E, F and F[1] (combined), and I. Many of the unclassifiable sherds are almost certainly sloughed North Bay specimens.

smoothing. The cordmarking is usually haphazardly oriented and is frequently quite deep. Many interiors retain carbonized incrustations. The pottery breaks with a jagged, irregular fracture and there is a strong proclivity to extensive exfoliation. North Bay ware is not a technically good pottery although, like most products of human enterprise, there is some range in this regard. Similar in paste and construction to some Early Woodland wares (Vinette 1), North Bay ware has been more fully described elsewhere (Mason 1966).

North Bay Cordmarked

This pottery type was recognized at the stratified Mero site and is described in the report on that work (Mason 1966).

At the Porte des Morts site 13 vessels seem to be represented by 17 large rims (Pl. 1). In addition to the above, the Porte des Morts collections include 1288 cordmarked body sherds lacking decoration of any kind. However, it is clear that most of these must belong to the cord roughened and undecorated areas of decorated vessels.

The undoubted **North Bay Cordmarked** rimsherds belong to vessels with vertical to slightly or moderately everted rims. One vessel has a constricted neck and a short and moderately

Plate 1. North Bay Cordmarked Rims. Sale: 50 mm.

everted rim. Lips are flat, round, or even pointed. One pot has a flat lip well pushed out over the outer rim wall.

The majority of lips are undecorated. Others are embellished with transverse impressions of a cordwrapped stick. Three unique lips have twisted cord punctations at the junctures of lip and inner and outer rims, longitudinal cordwrapped stick impressions on the lip combined with partly transverse imprints, and longitudinal scallop stamps in conjunction with stamped notched at the juncture of lip and outer and inner rim walls.

North Bay Plain

This sherd and vessel type has been previously defined and described as a result of excavations at the Mero site (Mason 1966). At the Porte des Morts site 21 rimsherds from probably 9 different vessels were found (Pl. 2). Plain undecorated body sherds numbered 4720 at the Porte des Morts site. While some of these must belong to **North Bay Plain** vessels, the size of the sample contrasted with the small number of undoubted **North Bay Plain** rimsherds indicates that most are from basal and other undecorated areas of decorated vessels already accounted for under the following type descriptions.

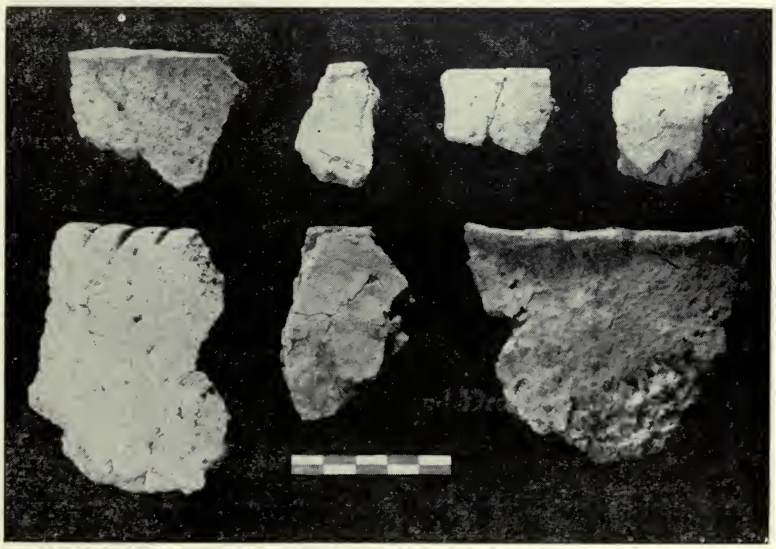


Plate 2. North Bay Plain Rims. Scale: 50 mm.

The **North Bay Plain** vessels from the Porte des Morts site were probably all straight rimmed shoulderless vessels with round to conoidal bases. Lips are evenly very flat, round, or are pointed. All but two vessels have undecorated lips. The two exceptions have short oblique cordwrapped stick imprints at the juncture of lip and inner rim or deep narrow notches cut across the lip from the upper outer rim wall.

One vessel has oblique plain stamps or incisions running around the upper inner rim. Otherwise, vessel interiors are as plain and unembellished as the exterior surfaces. It is evident that plain surfaced undecorated vessels were rare in the North Bay component at the Porte des Morts site. While not as rare at the Mero site, they constitute a minority type there also.

North Bay Dentate

This is a newly defined type based on materials excavated at the Porte des Morts and Mero sites.

Illustrations: Pl. 3

Sample Size: 46 rims and 247 body sherds from an estimated 53 vessels from the Porte des Mortes site, and 26 rims and 67 body sherds from an estimated 17 vessels from the Mero site.

Plate 3. North Bay Dentate Rims. Scale: 50 mm.

Surface Finish: Of the estimated total sample of 70 vessels less than 15 percent have other than plain smooth surfaces where decoration occurs. Only six vessels have cordmarked surfaces, and three are brushed. Additional undecorated brushed body sherds probably belong to these three unusual vessels.

Decoration: But for the occasional employment of bordering punctates and the rare use of incised lines, dentate stamping is the sole decoration on vessel exteriors.

The dentate stamping generally divides into two main categories: a) a continuous but segmented linear stamp, and b) linear sets of disconnected and discrete individual tooth imprints. Intermediate samples blur the distinction, however. Examination of these variations suggests that the stamping was frequently done with the edge of a shallow notched tool, the depth of the notching and the depth of tool impression in the clay determining the difference between "a" and "b" as well as accounting for the intermediate examples. Another distinction which crosscuts the above divides the tooth imprints into square or rectangular ones and circular ones, again with intermediate forms. This was certainly a function of the style of notching of the tool edge as well as the manner of application to the clay. A third slightly different formal category (c) includes the dentate stamped sherds from the North Bay II component at the Mero site. These have roughly triangular tooth imprints connected along one edge only. They were affected by use of a rounded tool edge into one side of which notches had been cut. As nearly as can be determined the overall length of the stamping implements varied from 8 to at least 26 mm. There seems to be a general grouping of these lengths into three clusters: long (21 mm. average length), medium (15 mm. average), and short (9 mm. average). Individual tooth imprints are normally 1 to 4 mm. long and up to twice as wide. Very fine tooth marks (called "scored dentate" in the Mero site report) are sometimes less than .5 mm. across.

The most common designs are parallel rows of vertical or diagonal dentate stamps separated by undecorated zones, continuous vertical or diagonal lines of dentate stamps applied end to end, and continuous parallel horizontal lines — all on

the vessel rims and frequently covering the upper half of the vessel. Also common are vertical or diagonal lines on the upper rim above a vessel encircling band of horizontal lines. All of these may be accompanied with bordering circular to linear punctates. Relatively minor decorative arrangements include chevrons, inverted triangles, and crisscross lines on the rim; these may be underscored by horizontal lines. Infrequently, a vessel may be decorated only with short vertical lines on the upper rim. The stamp may be closely or widely spaced and may show evidence of simple zoning with incised or trailed lines or bordering lines of dentate stamps. One vessel has oblique incisions ("gashes") between a row of punctates and a row of dentate stamps below the rim. Two vessels have horizontal or vertical dentate stamping so closely spaced as to strongly resemble check stamping.

A small majority of vessel lips are plain. Otherwise lips are embellished with transverse or, rarely, oblique shallow incisions or dentate stamps. The dentate stamp may also notch the juncture of lip and inner rim wall. Rarely, the exterior rim-lip juncture is dentate stamped and is opposed on the opposite side by cordwrapped stick imprints. Interior rims are only infrequently embellished.

Form and Size. Rims are vertical or incline a few degrees on either side of the vertical. In a few cases there is relatively marked upper rim eversion. Lower rim construction, when present, is usually slight. Vessel lips are about evenly flat or round in the great majority of cases and sometimes exhibit extrusion of surplus clay over the upper part of the outer rim wall. A few rims taper to an almost pointed lip. Only a few lips are beveled. They average in width about 6 to 8 mm. within a range of 4 to 10 mm.

Relationships: North Bay Dentate, though generously overlapping in time, appears to be the local ancestor of **North Bay cordwrapped Stick.** Many examples of **North Bay Dentate,** particularly those with discrete rectangular tooth imprints, are very similar to **Laurel Dentate** in Minnesota and **Vinette Dentate** in New York and eastern Ontario which show many of the same designs. The **North Bay Dentate** sherds from the North Bay 11 levels of the Mero site are similar to the plain surfaced dentate stamped versions of the Point Peninsula

type **Kipp Island Crisscross.** In southwestern Wisconsin the cross-hatched dentate stamped rims of some of the Trempealeau Focus vessels share this resemblance. Selected examples of **North Bay Dentate** also resemble the Illinois Hopewellian types **Naples Dentate Stamped** and **Hummel Dentate Stamped,** but totally lack the embossed nodes.

North Bay Scallop

This is a newly defined type, based on materials excavated at the Porte des Morts site.

Illustrations: Pl. 4

Sample Size: 10 rims and 82 body sherds from an estimated 22 vessels. One water rolled rim was found with the North Bay I component incorporated in the buried beach in Stratified Area I at the Mero site.

Surface Finish: The surface is always smooth.

Decoration: But for the rare use of a cordwrapped stick on the lip, decoration is restricted to scallop edged stamped imprints.

The stamped impressions are of the form elsewhere named "scallop shell" or "pseudo-scallop shell." The stamps evidently were produced with an alternately notched implement

Plate 4. North Bay Scallop Rims and Body Sherds. Sale: 50 mm.

which produced a tightly and regularly serpentine impression. The frequently continuous end-to-end application of the stamp makes it difficult to determine the length of the individual stamp, but they usually seem to fall between 20 and 30 mm. and are 1.5 to 5 mm. wide. The imprints are shallow to bold.

Vessel decoration seems to have been confined to the rim and upper part of the body. The majority are embellished with parellel rows of parallel columns on the rim and upper part of the body. In the former case the stamps were applied end to end to produce a continuous effect; in the latter case there is usually a break between the ends of the vertical imprints. Less frequently, the scallop stamp is vertical on the rim and is underscored by continuous parallel rows of horizontal imprints. Less common variations include diagonal stamping, diagonal stamping interrupted with horizontal stamping, chevrons, and horizontal stamping with suspended inverted triangles filled with short diagonal stamps. One vessel with vertical stamps on rim has been subsequently smoothed, partly obliterating the stamping.

Most lips are decorated with scallop imprints transversely or obliquely applied or applied at the juncture of lip and inner rim. Occasionally, the lip-outer rim juncture is notched with the scallop stamp. Rarely, a cord-wrapped stick was substituted. Approximately 15 per cent of the **North Bay Scallop** vessels had plain undecorated lips.

Form and Size: Rims are straight and vertical or are slightly excurvate. Lip form is either flat or tapered with an inner bevel. They are 5 to 10 mm. across.

Relationship: A related type in Minnesota is **Laurel Pseudo-scallop Shell; North Bay Scallop,** however, lacks the embossed nodes so characteristic with that type. Although rim and lip form is different, the early to middle point Peninsula type **St. Lawrence Pseudo Scallop Shell** in New York, eastern Ontario and northern New England suggests some relationship with that region.

North Bay Cordwrapped-Stick

This is a newly defined type based on materials excavated at the Porte des Morts and Mero sites.

Illustrations: Pl. 5

Sample Size: 84 rims and 332 body sherds from an estimated

68 vessels from the Porte des Morts site, and 9 rims and 10 body sherds from probably 6 vessels from the Mero site.

Surface Finish: The surface is nearly always smooth; it is likely, however, that some of the vessels had cordmarked surfaces below the decorated area. Two vessels did have completely cordmarked surfaces.

Decoration: Except for the occasional use of bordering punctates, cordwrapped stick impressions are the only decoration.

Decoration consists of several relatively simple arrangements of linear cordwrapped stick impressions. It is possible that some of the stamped imprints are those of a cordwrapped paddle edge or of a cordwrapped string. They range in width from an unusually narrow 2 mm. to 8 mm.; 3-6 mm. is most common. While sometimes faint and shallow, they are usually moderately to deeply impressed.

The most common decoration by far consists of parallel horizontal lines beginning at the top of the rim or beneath an undecorated zone and covering the upper part of the vessel. This may be augmented by circular to linear punctates above and/or below the panel of cordwrapped stick impressions. Each line of impressions may be contiguous to its neighbors or separated by an equal or larger undecorated zone. Minor-

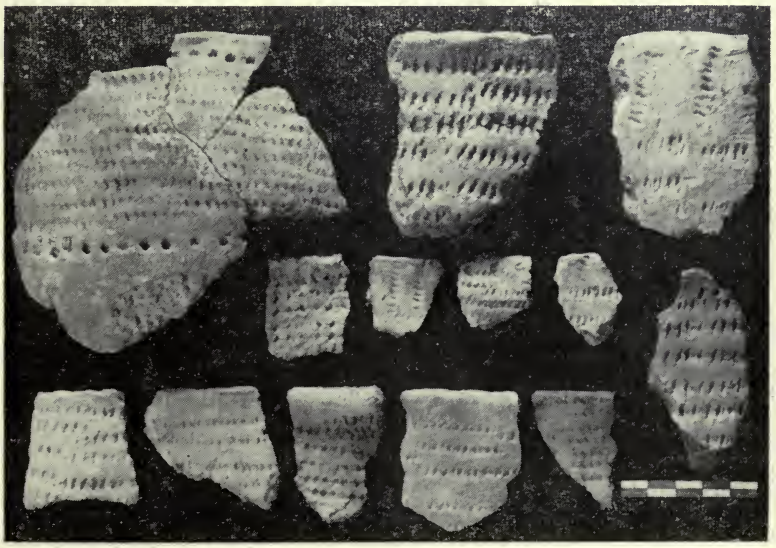


Plate 5. North Bay Cordwrapped-stick Rims. Scale: 50 mm.

ity arrangements include a single line of cordwrapped stick impressions running around the upper rim, diagonal lines running down from the lip, and vertical or diagonal lines on the upper rim with horizontal lines below.

Although there are many plain lips (**ca.** 1 of 3), most are embellished with cordwrapped stick imprints. Commonly, these are transverse or oblique on the lip or occur obliquely at the juncture of lip and inner rim wall. Rarely, this stamping occurs at the juncture of lip and outer rim or is longitudinally applied on the lip proper. One example of plain edge notching at the juncture of lip and inner rim is known.

One vessel has diagonal lines of cordwrapped stick on the inner rim and another has horizontal impressions. But for this and the numerous instances of lip-inner rim juncture imprints, vessel interiors are always undecorated.

Form and Size: Rims tend to be straight and vertical though many are gently constricted and slightly to moderately outflaring at the top. Lips are flat or round with some rims tapering to a relatively thin rounded lip. Marked inner lip beveling is common. Lip thickness ranges from 4 to 13 mm. with most falling between 6 and 9 mm.

Relationships: North Bay Cordwrapped-stick appears to derive from **North Bay Dentate** and is the local ancestor of **Heins Creek Cordwrapped-stick.** It differs from the latter in its smooth surface finish, virtual absence of inner rim decoration, high incidence of inner rim-lip juncture notching, rarity of cordwrapped stick punctates as bordering elements to the main decoration, much higher frequency of bordering circular and rectillinear punctates, more vertical rim with less upper rim flare, weaker shoulder development, and in details of paste and inner surface finish.

The transitional Middle to Late Woodland Iowa type, **Levson Stamped,** is a related type whose affinities, however, are closer to **Heins Creek Cordwrapped-Stick.** There are resemblances to the Illinois Hopewellian pottery **Naples Stamped,** particularly the cordwrapped stick variety on a plain surface, but minus the bosses so typical of Naples and other Havana Ware pottery. There are also remote similarities in the case of the simplest **North Bay Cordwrapped-stick sherds** (those with simple vertical to oblique lines decorating the rim)

with certain examples of cordwrapped stick decorated **Weaver Plain** in Illinois, which seem to occupy a somewhat later time level.

The most similar pottery occurs in the Middle Woodland of eastern Canada and New York in **Point Peninsula Corded,** whose chief difference is in the frequent presence of a cordmarked surface finish. Additionally, the inner beveling and occurrence of flat lips is not as common in that type. Just as **North Bay Cordwrapped stick** is developmentally antecedent to **Heins Creek Cordwrapped-Stick,** so **Point Peninsula Corded** seems correspondingly related to the later Owasco cordwrapped stick impressed types in the Northeast. Heins Creek-Owasco resemblances reinforce this comparison.

North Bay Linear Stamped

This is a newly defined type, based on materials excavated at the Porte des Morts site.

Illustrations: Pl. 6

Sample Size: 79 rims and 178 body sherds from an estimated 56 vessels; a few more examples were excavated at the Mero site.

Surface Finish: The surface is almost always smooth. Only two vessels have cordmarked surfaces.

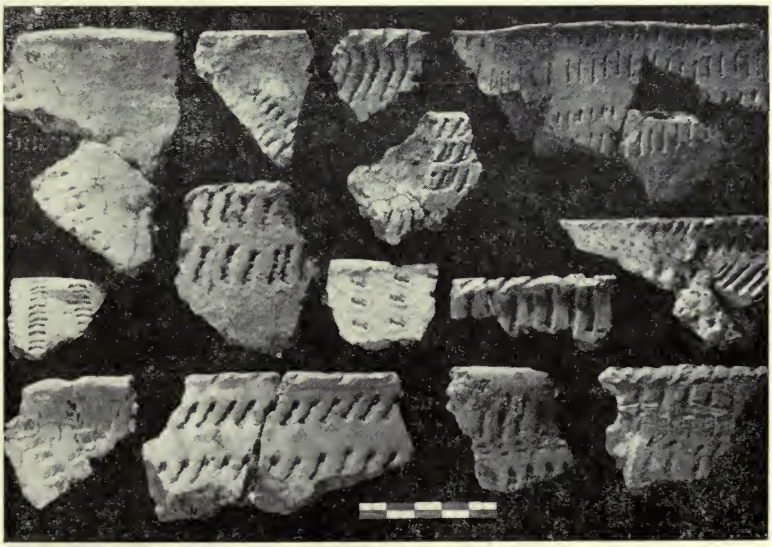


Plate 6. North Bay Linear Stamped Rims. Scale: 50 mm.

Decoration: Except occasionally on the lip and/or inner rim, plain linear stamped is the sole decorative technique.

The stamped imprints are straight to slightly crescentic and may be a little deeper at one end and/or side. A rare variant was produced by slipping one end of the stamping tool sidewise as it was removed from the clay; this resulted in making the slipped end wider than the stationary end to which it tapers. This type of stamp varies from a plan rectillinear bar to the more common rough linear stamp whose untailored appearance suggests the use of a broken piece of wood or bone. Individual stamps are 4 to 24 mm. long (most are 7 to 15 mm.) and .5 to 4 mm. wide (most are 2 to 3 mm.); the impressions are faint to deep and bold (ca. 2-3 mm.)

Vessel decoration typically consists of 1 to at least 4 rows of vertical or slightly oblique stamps running around the rim (48 vessels). In a few cases this decoration may have been applied from the upper rim to half way down the vessel. Two minority alternatives to the above exhibit vertical columns of horizontal stamps running down from the rim (2 vessels) and similarly located columns of obliquely applied stamps (4 vessels).

Approximately two of every three lips are decorated by notching or stamping with a plain, or rarely, cordwrapped stamp; the stamp may be applied across the lip or at the juncture of lip and outer and/or inner rim, and sometimes alternately. A few lips have been transversely incised or very shallowly stamped with a narrow instrument prior to smoothing.

Form and Size: Rims are usually straight; less frequently they are faintly excurvate. Although occasionaly rounded, most lips are distinctly flat; they range in thickness from 5 to 14 mm. with most falling between 7 and 10 mm.

Relationships: The closest comparable pottery and undoubted genetic relative is the Minnesota - western Ontario Middle Woodland type **Laurel Linear Stamp** (Stoltman 1962), although this tends to be more precisely embellished with more closely spaced stamps. Very similar pottery to both **Laurel Linear stamp** and **North Bay Linear Stamped** has been recovered from beneath the surface of Lake Superior off Naomikong Point in the Upper Peninsula of Michigan in

association with pseudo-scallop shell and dentate stamped pottery (Quimby 1965). To the south of Wisconsin select examples of **Naples Plain Stamped** are clearly reminiscent of **North Bay Linear Stamped** (Griffin 1952: Pl. XXXIII, Fig. G) as well as **Becker Punctate** (fig. I). More striking correspondences are to be seen even further south in southern Illinois and adjacent Indiana. Neumann and Fowler (1952: Pl. LXXXIX, fig. 24) illustrate a rimsherd of **Wabash Bar-stamped** from the Hubele site, White County, Illinois, which is virtually indistinguishable from **North Bay Linear Stamped** with parallel rectilinear bar stamping over a plain surface and with the stamps oriented vertifically in a horizontal band or bands. They suggest that the type, apparently rare, falls in late Hopewell times.

Unclassified Punctated

This category excludes the annular punctated sherds and the sherds of **Becker Punctate** described in the section dealing with minority and miscellaneous sherd categories.

The collection of unclassified punctated sherds comprises seventy-eight specimens (27 rims and 51 body sherds) from a

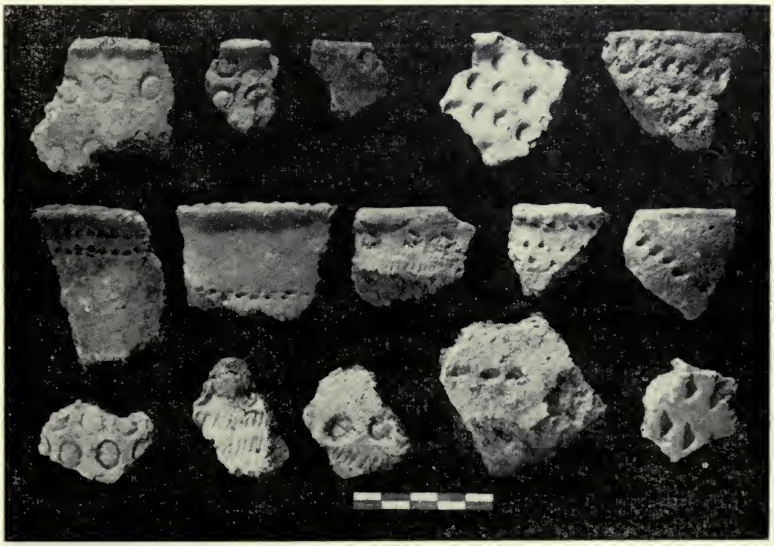


Plate 7. Unclassified Punctated Rim and Body Sherds, Including (top row, left four; and bottom row, left three) Annular Punctated. Scale: 50 mm.

possible twenty-seven vessels. This estimated number may be exessive since many of the sherds are small and differences between them have been magnified as a function of diminished perspective. All of the sherds suggest vessels decorated exclusively or predominantly by punctating — always on a smooth surface. A representative sample is shown in Plate 7 along with examples of annular punctated sherds.

The punctates are surprisingly variable in configuration. Most are round to ovoid or, less frequently, are rectilinear or almost crescentic. There is one example of punctations effected by the finger tip, complete with nail impressions. One vessel was decorated with what appears to have been a broken, hollow tube (a bird long bone?); this left a series of pitted circular outlines reminiscent of the annular punctates described under that heading below. Designs consist mainly of one or two rows of punctations on vessel rims, although some spots were also so embellished well down on the body. In one case the decorating implement was dragged from punctate to punctate in a single row on the vessel rim; from this, other lines of punctates diverged to join horizontal lines on the body proper. It is impossible to reconstruct the probable design. In

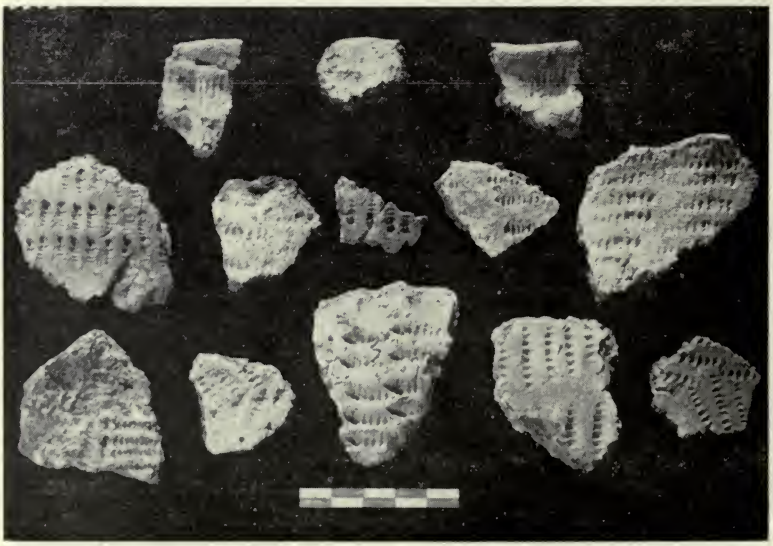


Plate 8. Corded Stamped (pseudo-dentate) Rim and Body Sherds. Scale: 50 mm.

all details of temper, paste, surface finish and lip form, the punctated sherds are conformable with the rest of the North Bay ceramic series.

Corded Stamped (pseudo-dentate) Pottery

Four rimsherds and thirty-three body sherds fall in this category defined by a distinctive application of the cord-wrapped stick decorative technique (Pl. 8). Although probably nine individual pots are represented, they are so inadequately survived by small fragments that almost nothing can be said about size or shape. The extent and pattern of decoration is also poorly known.

All of the sherds have a plain or smoothed-over-cordmarked surface finish. Decoration is by the application of a cord-wrapped stick in such a manner as to produce plats of short imprints which are very reminiscent of — and are certainly a substitute for — dentate stamping. These pseudo-dentate stamps are usually arranged in parallel columns (with each stamp oriented horizontally) or in parallel rows (with each stamp oriented vertically). Combinations of the foregoing are less common as are diagonals and chevrons. The stick around which the cord was wrapped is only rarely visible in the stamp. Fairly commonly, one end of the stamp is deeper than the other. To judge by the few surviving vertical to slightly everted rims, this embellishment usually commences just under the lip and extends over the rim and down onto the upper part of the vessel body. Lips are round or barely flattened. Inner channeling or brushing occurs infrequently.

Identical pottery was recovered in North Bay contexts at the Mero site. In conformity with other reviewed evidence of a developmental sequence it appears that the plain surfaced North Bay corded stamped pottery of the Middle Woodland Period was the local ancestor of the cordmarked **Heins Creek Corded Stamped** type of the early Late Woodland Period (Mason 1966).

Simple Stab-and-Drag

Fifteen sherds (2 rims and 13 body sherds) from probably five separate vessels were decorated by alternately impressing and dragging a rectilinear or quasi-crescentic punctating implement across the surface (Pl. 9, a). This technique is sometimes also called "push-pull" or "push and pull." The

vessels appear to have had vertical or only moderately excurvate rims and flat lips. The decoration was applied over a smooth vessel surface in parallel rows on the rim beginning just below the lip. How far this decoration was carried down on the body is not known.

The closest affinities of these sherds are clearly to the north where almost identical sherds are common in the Laurel Culture of northern Minnesota and in closely related complexes extending from Manitoba eastward through Ontario.

Complex Stab-and-Drag

The vessels represented in this category differ from the foregoing in that the decorative tool has a toothed or dentate stamp which left a distinctive striated trail where the imple-

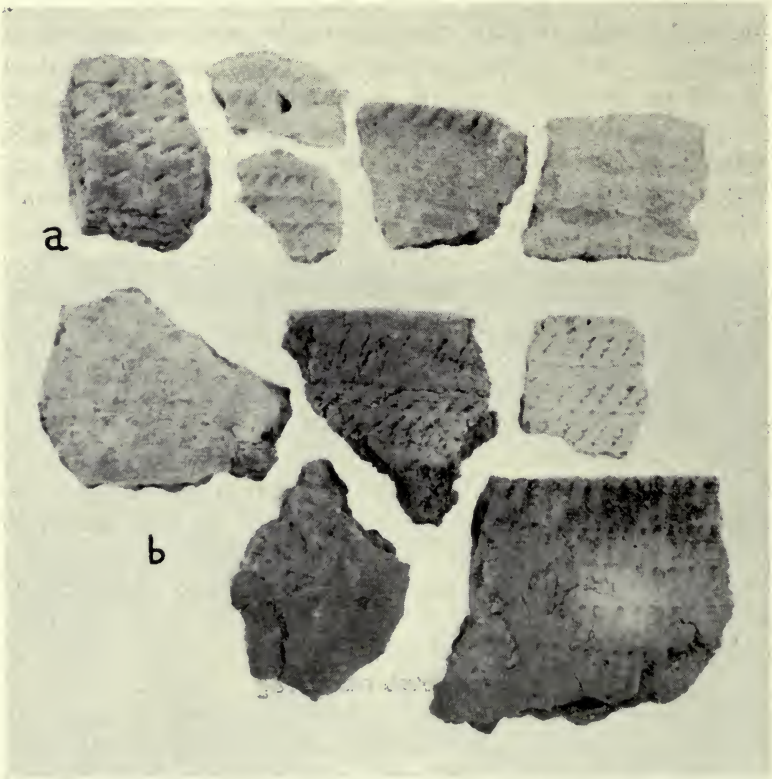


Plate 9. Stab-and-Drag Decorated Sherds: a) Simple Stab-and-Drag, b) Complex Stab-and-drag. Rim length of sherd at lower right: 48 mm.

ment was dragged between stabs (Pl. 9, b). There are twenty-one sherds (4 rims and 17 body sherds) from the three vessels in this category. The best represented vessel probably had a vertical rim covered with contiguous rows (with the dentate stamp rim oriented vertically or slightly obliquely). On the body the implement was dragged in a wavy or undulating manner. The outer rim-lip was impressed with the dentate stamp.

Like the similar simple stab-and-drag sherds, the complex variety relates the North Bay Culture to the Laurel-Saugeen-

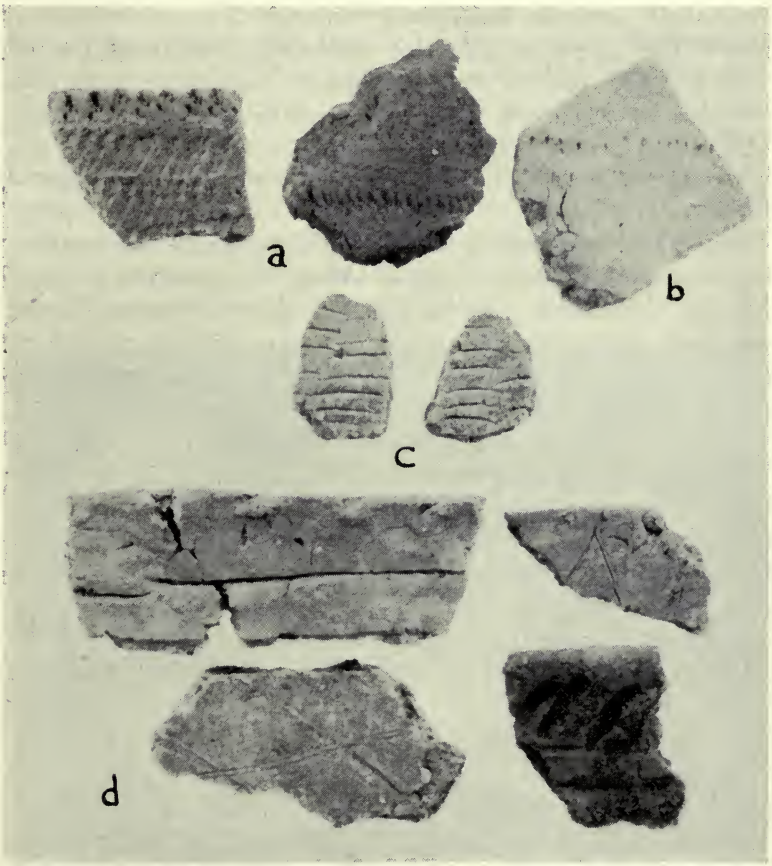


Plate 10. Sherds: a) Rockered Dentate Stamped, b) Plain Rocker Stamped, c) Becker Punctate, d) Unclassified Incised. Rim length of sherd at lower right: 21 mm.

Point Peninsula continuum where this same kind of pottery is variously called "complex push and pull" (L. A. Wilford), "dragged stamp" (J. V. Wright), and "complex dentate" (R. S. MacNeish and W. A. Ritchie). These suggestive interconnections will be explored at greater letail in the concluding connections will be explored at greater detail in the concluding section of this report.

North Bay Rocker Stamped

These sherds are labelled "North Bay" to distinguish the category from another group of highly distinctive rocker stamped sherds described below. There are nine sherds (3 rims and 6 body sherds) from a minimum of four vessles with North Bay paste which were apparently decorated overall with parallel rows of rocker stamping applied on a smooth surface. Both dentate (Pl. 10, a) and plain rocker stamping (Pl. 10, b) appear. This is the only decoration. Vessel lips were flat (but not thick) and rims were vertical or slightly everted.

Since rocker stamping occurs in widespread Hopewellian contexts south of this latitude as well as in the northern tier of Middle Woodland cultures already alluded to, the closest affinities of the North Bay examples are difficult to isolate. This is not the case with the other category of rocked stamped sherds from the Porte des Morts site described below.

Hopewell Rocker Stamped

A single vessel represented by one rim and eleven body sherds is a classic example of a Hopewell (Hopewell or Baehr Ware) rocker stamped pot almost certainly manufactured in Illinois by a fine Hopewell potter (Pl. 11). The vessel was a medium small one, very finely made and with a smooth surface finish. The tempering consisted of small pieces of crushed limestone — now completely leached away. Technically, this very hard ware is the finest pottery from the site. The vessel had a round body, short neck and short, collared rim. This latter feature is a result of molding and there is an inner rim channel corresponding to the exterior collar. The lip is round. The collar is decorated with a single row of short vertical or slightly oblique linear punctates. Beginning at the neck, the vessel body was covered with plain rocker stamping in contiguous columns. The collar is 6 mm. thick; the body

sherds are 3.5 to 5.5 mm. thick. One of the body sherds has a suspension or repair hole.

This unique vessel was made by a Hopewell potter, probably in the Illinois Valley and was directly or indirectly traded to North Bay people. According to James B. Griffin, this type of vessel with overall rocker stamping is characteristic of late, rather than early, Hopewell; this is fully compatible with the Porte des Morts site radiocarbon date.

Becker Punctate

One vessel of the type **Becker Punctate** is represented by two rimsherds (Pl. 10, C). Two other vessels may be attested by one body sherd each (this is far from certain, however, as the sherds are very small and have indistinct surface features). This North Bay pottery type was first described on the basis of finds at the Mero site (Mason 1966) and the undoubted **Becker Punctate** sherds from the Porte des Mortes site do not depart from this description. The sherds indicate vertical rimmed vessels of small dimensions simply decorated with parallel horizontal rows of vertically oriented simple linear stamped imprints on a smooth surface.

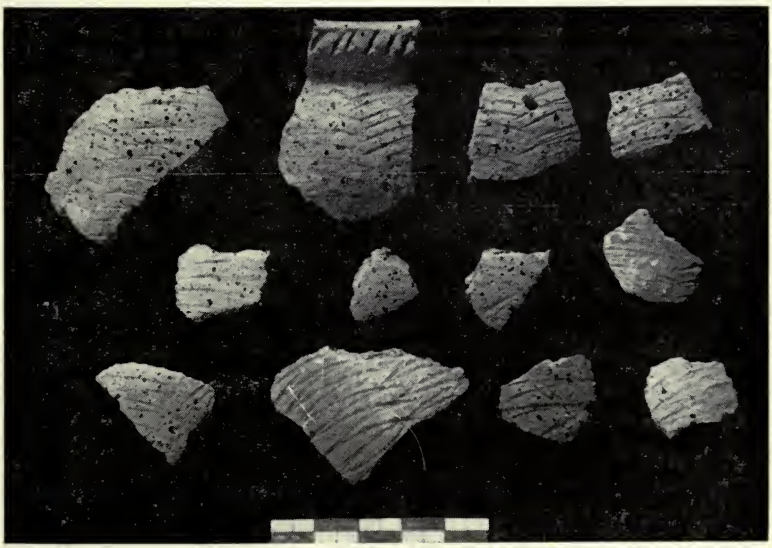


Plate 11. Hopewell (Baehr) Rocker Stamped Rim and Body Sherds. Scale: 50 mm.

Annular Punctate

There are twenty-one sherds in this category (6 rims and 15 body sherds) from approximately seven vessels (Pl. 7, top row, left 4; bottom row, left 3). The ware is exclusively North Bay and the surface finish is plain or smooth. Decoration consists of rows of large annular punctations on vessel rims and for an unknown extent onto the upper body. On at least one vessel it appears that a single row of such punctates was used to underscore a horizontal zone of parallel cordwrapped-stick imprints. Otherwise, as far as is known, annular punctates are the sole decorative mode on the vessels represented. On one vessel the punctating stylus was applied at such an angle as to produce crescentic punctates instead of annular ones. The punctates themselves are 4 to 11 mm. in diameter, on most sherds tending to the latter.

The vessel rims were vertical or only slightly excurvate. Lips are flat to round and may be a little everted over the upper rim. One lip is beveled interiorly.

Comparable material which comes immediately to mind is the annular punctated variety of **Sister Creeks Punctated** in Illinois and the more similar material from the Saugeen Focus Donaldson site in Ontario.

Incised Sherds

Four vessels are attested by five rimsherds and thirteen body sherds (Pl. 10, d). All exhibit typical North Bay paste features and have a plain surface finish. Little can be ascertained from the limited sample about designs or vessel shape. One vessel has a row of short oblique incisions (possibly linear punctates) on the upper rim with parallel, horizontal incised lines below. The second vessel had two horizontal incised lines running around the rim and was equipped with a notched, subsequently smoothed lip; nothing can be said about decoration on the body. A third vessel had incised criss-cross lines on the rim and possibly on the upper part of the body. The fourth pot is represented by very crudely incised body sherds. The pattern is not reconstructable.

Cord Impressed Pottery

There are only four cord impressed sherds — all rims — which can be related to the North Bay occupation at the Porte des Morts site. These are from two vessels with North Bay

paste attributes and with smooth surfaces. One of these came from the upper levels of X-Unit I, a context heavily dominated by Late Woodland and Mississippian materials. Nevertheless, the paste attributes strongly suggest attribution to the North Bay component. The two rimsherds from the other vessel were found in clear North Bay contexts (T. P. 15) in the south sector of the site.

All that can be said about the first vessel is that the rim was decorated with three parallel (horizontal) cord imprinted lines underscored by deep, crescentic punctates. A very similar vessel was found in disturbed contexts at the Mero site (Mason 1966). The second vessel was embellished on the rim by diagonal twisted cord impressions; the lip is round and is notched inside and out by imprints of a cordwrapped stick. This unusual North Bay pottery suggests a northeastern Wisconsin early version (prototype?) of **Madison Cord Impressed** both in the technique of decoration and in the style of decoraion. The crescentic punctates and the paste characteristics are not known for that type however. **Madison Cord Impressed**, or the local relative of that type, is known from the Late Woodland components at both the Porte des Morts and Mero sites.

Water-worn Sherds

Only a small collection of clearly water-rolled potsherds (56 in all) were found. All of these are classifiable as North Bay sherds although they preserve insufficient surface features for typing. They exhibit the surface erosion, protruding isolation of temper particles, rounded edges, etc. already fully described for the Mero Site (Mason 1966). At the latter station somewhat less than twice as many water--worn sherds were found in a total collection of North Bay sherds only one fifth as large as that from the Porte des Morts site.

Two-thirds of the Porte des Morts water-worn sherds were found in the excavations closest to the shore and at elevations between eight and ten and a half feet above mean lake level. Thirteen were discovered in unequivocal lacustrine deposits (X-Unit H, stratum C). It is more difficult to explain the presence of 16 specimens in X-Unit D (16-17 feet above the lake) and another 4 in B, stratum D (about 18 feet above lake level) — all situations clearly never subjected to inundation or

wave action. Perhaps the sherds had simply been picked up along the shore and brought back as curiosities. The interesting problems raised by the buried lacustrine deposits incorporating and overlying North Bay cultural material in X-Unit H cannot be divorced from the very similar evidence at the Mero site. The reader is referred to the report on that work for a detailed discussion of this problem (Mason 1966).

Sloughed and Unclassified North Bay Sherds

There are 1220 sherds which are so split or sloughed as to defy classification beyond certain to probable indentification as North Bay ware. The great majority of these preserve interior surfaces only, most of the sloughed sherds with intact exterior surfaces being classifiable. Tempering and paste attributes combined with provenience information indicate the North Bay affinities of the sherds in this category. The great number of exfoliated sherds appears to be due to heavy rootlet penetration along the concussion planes of the pottery. This also occurred with many Mississipian sherds (particularly the shell tempered examples) but is not characteristic of the Late Woodland specimens.

CHIPPED STONE INDUSTRY

Cores

It appears that the North Bay people struck flakes from almost any convenient striking platform offered by a nodule or broken pebble of chert with minimal preparation. This probably accounts for the thousands of oddly fractured pieces of chert strewn about the Porte des Morts site, a situation earlier noted at the Mero site. Such core implements as the biface choppers and biface blanks must also have produced some flakes incidental to their manufacture which could have been salvaged to make such flake implements as scrapers and the smaller knives and projectile points.

The seemingly haphazard approach to flake procurement must in large measure have been a function of the poor quality chert with which the region is stocked as well as a relaxed attitude (also seen in so many finished artifacts) about extra-utilitarian aspects of stone tool production. Generally, then, the typical North Bay core is simply a slab or nodule of chert from which one or more percussion flakes were removed from the most handy surface. Nevertheless, seven exhausted cores

were discovered in North Bay contexts which clearly were prepared exclusively as flake producing sources. These are roughly tabular, exhausted nuclei showing more or less multiple, parallel, blade-like flake scars running down their long axis and with battered ends (Pl. 12, a). These are bi-polar cores in that the elongated flakes had been removed from both ends until the core was reduced beyond use. Many flakes had hinged out only half-way down the length of the core.

The exhausted cores vary in overall length from 20 to 50 mm. Very few blades or long, parallel sided flakes were found despite the presence of thousands of amorphous or irregularly shaped flakes. It is interesting, however, that four out of only eleven blades came from the same restricted locus (X-Unit B,

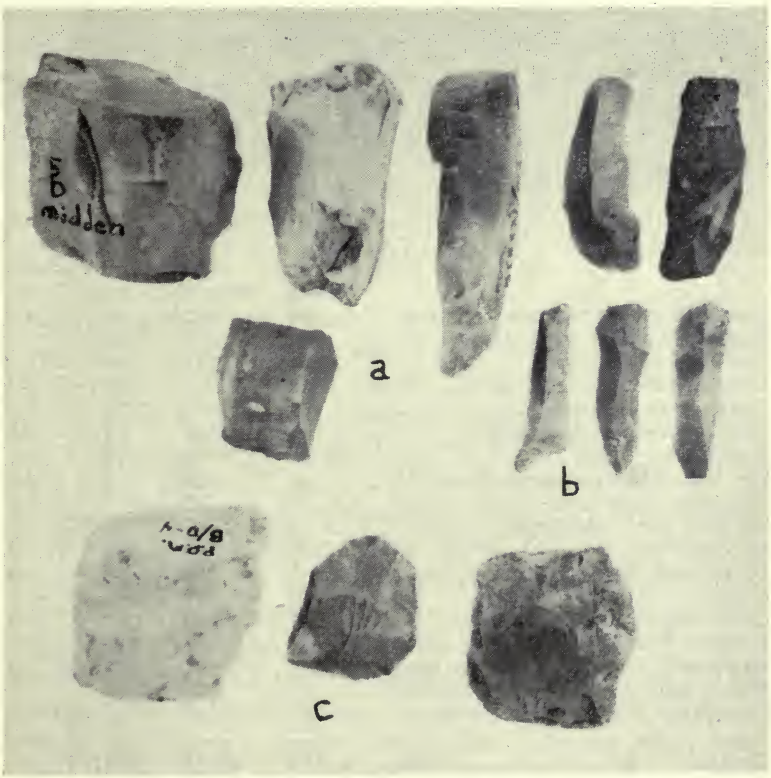


Plate 12. Chipped Stone: a) Prepared Cores, b) Parallel-sided Flakes, c) Quadrangular Implements. Maximum vertical length of specimen at lower right: 30 mm.

extension 2, stratum D). Some of these are shown in Plate 12 (b). Two of the cores described above came from this same area. All of the prepared cores are of local Niagaran chert.

Projectile Points

Initially, it may be observed that there are two general categories of chipped projectile points at the Porte des Morts site: simple triangular points and points with the basal section modified for hafting. These two categories have highly disjunct distributions both with respect to areal representation and vertical frequencies. This in itself is not surprising because of what is already known about projectile point chronology. Nevertheless, it is pertinent to review these distributions because they help confirm the ceramic stratigraphy and the cultural alignments of other artifacts whose relative ages are much less well known. Both classes of points are made of white to mottled gray to gray chert locally available in the limestone and gravels. One notched point is of red chert perhaps foreign to this area.

	Rims	Body Sherds	Estimated Vessels Vessels No.	%
North Bay Cordwrapped-stick	84	332	68	24.0
North Bay Linear Stamped	79	178	56	19.7
North Bay Dentate	46	247	53	18.6
Unclassified punctated	27	51	27	9.5
North Bay Scallop	10	82	22	7.7
North Bay Cordmarked	17	1288	13	4.6
North Bay Plain	21	4720	9	3.1
Cord stamped (pseudo-dentate)	4	33	9	3.1
Annular Punctate	6	15	7	2.4
Simple Stab-and-Drag	2	13	5	1.8
Incised	5	13	4	1.4
Plain and Dentate Rocker Stamped	3	6	4	1.4
Complex Stab-and-Drag	4	17	3	1.1
Cord Impressed	4	0	2	.7
Becker Punctate	2	2	1	.3
Hopewell (Baehr) Rocker Stamped	1	11	1	.3
Water-rolled North Bay Sherds		56		
Sloughted North Bay Sherds		1220		
Totals:	315	8234	284	

TABLE 3. Total Numbers of Sherds and Estimated Vessel Frequencies from the North Bay Occupation at the Porte des Morts Site, Door County, Wisconsin.

Disjunct areal distributions may be seen by comparing the north and south sectors of the site as divided by the gravel road. The north sector includes X-units F and F[1], H and I and Test Pits 1-10 and 39-42. The south sector includes X-units A, B and B (extensions), C, D, E, G and J as well as Test Pits 11-38. The great preponderance of triangular points (22 out of 27, or 81.5%) occurred in the north sector while the overwhelming majority of notched or otherwise tanged points (45 out of 48, or 94%) are from the south sector. Relative disparities in vertical position are less clear due to small samples where both point categories occurred in the same X-units. Compared with one another it is clear, nevertheless, that the triangular points tend to be distributed at shallower levels than do the stemmed and notched points. This observation is powerfully supported by associations with pottery samples. Throughout the site there is a striking correspondence in the conformable distributions of the two point categories with respect to the stratigraphy of sherd samples. Triangular points are associated with Late Woodland and Mississippian type sherds, and these are consistently in the majority above North Bay sherds and points (the notched and polar categories 2 (corner-notched) and 4 (stemmed). The stemmed forms).

In the south sector where the stemmed and notched points predominated, 8137 sherds were classifiable in one or another of the three great sherd categories. Fully 85 per cent of these sherds are North Bay while only 12 percent are Mississippian and 3 percent Late Woodland. In the triangular point dominated north sector, 77 percent of 5183 classifiable sherds are Mississippian and Late Woodland (56% and 21%, respectively) while only 23 percent are North Bay. In some of the X-units where larger samples were obtained, the correspondence between the dominant class of pottery and the dominant class of projectile points was even more marked. X-unit D, for example, yielded 1954 classifiable sherds of which 91 percent are North Bay. Fifteen points were found in X-unit D and all of these are stemmed or notched. On the other hand, 14 of 16 projectile points from X-unit I (including T. P. 1) are triangular and 79 percent of 3254 classifiable sherds are Mississippian and Late Woodland (61% and 18%, respectively). Additionally, X-unit I proved to have cultural stratifica-

tion as revealed by the analysis of the arbitrary excavational levels. The two North Bay type points came from the fourth or bottom level, and it was from the bottom of this X-unit that the overwhelming bulk of the North Bay pottery came.

Forty-eight North Bay projectile points were found at the Porte des Morts site (Pl. 13). This number includes broken (but identifiable) as well as whole specimens and necessarily excludes undiagnostic tip and blade fragments. Also excluded is an end-scraper made on a broken side — or corner-notched projectile point. The tip sections of an additional forty-three probable projectile points were also found; most of these, to judge by criteria of size and surviving conformation of the

Plate 13. North Bay Projectile Points. Length of specimen at lower right: 61:5 mm.

blade, appear to be from North Bay points.

It would be convenient if the North Bay points could be fitted into a clear typological scheme of discrete and objectively separable varieties each of which could then be used in a straightforward, empirical assessment of relationship with other named archaeological cultures. To attempt this, however, is to do violence to the intrinsic variability of the sample and to ignore the evidence which suggests that the North Bay people exercised fairly wide latitude in the concrete expression of the general idea of what projectile points look like. This seemed to be the case at the Mero site where the North Bay Culture was first identified and the sample of points from the Porte des Morts site has reinforced this assessment. Like all cultural products, nonetheless, the North Bay projectile points are not infinitely or randomly variable. But it is the case that they exhibit a wide "scatter" in attribute combinations than is the case with the projectile points of many other archaeological cultures.

While including a few perfectly symmetrical and clearly carefully made projectile points, the great majority are only moderately well fashioned or are, in fact, crude and finished only in a utilitarian sense. This is in part — but only in part — a function of available raw materials for chipping. Most of the point are made of local Niagaran chert which, generally, is of uneven and usually poor quality. Perhaps seven or eight specimens are of cherty materials of unknown source — possibly derived from glacial gravel.

The main manufacturing technique was percussion, pressure flaking being largely confined to edge straightening and thinning. Roughly ovoid percussion flakes provided the raw blanks, with the bulbar end becoming the site of the basal or proximal end of the projectile point. Several specimens retain small or large remnants of the striking platform on a wholly or minimally retouched base. There is no evidence of ground basal edges. Cross-sections are relatively flat and lenticular although some are interrupted where flakes hinged out and failed to reduce a knobby eminence on one, or sometimes, both faces. In general the points may be described as broad bladed with a blade configuration continuously variable between triangular at one extreme and ovoid at the other and

with most specimens in between. The haft element varies from opposing notches cut into the blade to a bilaterally inset simple stem. It is quite clear from an examination of haft elements, basal form, blade configuration, and size that the North Bay points represent an intergraded series rather than a set of cleanly demarcated types.

In order to describe the variability, and yet isolate the consistent or integrating features, the points were first segregated on the basis of configuration of the hafting element and correlations were then searched for with other variables. Four major categories were initially distinguished: 1) side-notched, 2) corner-notched, 3) corner-removed, and 4) stemmed. The first category is defined by opposing notches cut into the blade in such a manner that the lateral edges below the notch are as widely separated as those above and preserve intact the original junctures of lateral and basal edges. In the secondary category the notching was sited at the juncture of lateral and basal edges; the distance along the basal edge is thus somewhat less than the width of the blade above the notches; there is also a tendency for the notches to be obliquely oriented. In the third major category (corner-removed) notching at the lateral-basal corners was so wide and deep as to produce an effect midway between corner-notching and stemming; the base below the notches is still significantly expanded. In the last category (stemmed) the blade corners have been completely removed in right-angular fashion and the specimens are equipped with a more or less parallel sided, straight tang instepped from the blade.

It is to be stressed that almost one of every three points exhibits attributes intermediate between one or another pairs of the four categories. For example, four points have hafting elements whose configuration is shared equally with the corner-removed and stemmed categories: one side of a specimen is in fact straight stemmed while the other side is corner-removed with resulting bilateral asymmetry. To recognize all of these quantitatively important intergradations. I categorized such artifacts by intergrades: 1.5) specimens intermediate between categories 1 and 2; 2.5) specimens intermediate between categories 2 and 3; and 3.5) those similarly between 3 and 4. The resulting seven categories are descriptive only and were not

meant to signify cultural categories. Two of them, nevertheless, appear to approximate aboriginal cultural ideas behind the actual products.

Categories 2 (corner-notched) and 4 (stemmed) account for half of the classifiable points. When the adjacent intergrades are added 85 percent of the points are comprehended. Since category 3 (corner-removed) may well be in itself a simple morphological intergrade between categories 2 and 4, it is readily absorbed in a continuum of intergradation from categories 2 (if not in the intergrade 1.5) to 4. This leaves only two points (category 1: side-notched) outside the intergraded series. But even here, one of the two points is only barely distinguishable from intergrade 1.5 and may belong in it.

The distribution of points is summarized thus:

category	haft element	no.
1	side-notched	2
1.5	intergrade	4
2	corner-notched	11
2.5	intergrade	4
3	corner-removed	4
3.5	intergrade	4
4	stemmed	10
	Total:	39

Two other variables which have a biased distribution in the samples are basal edge form (straight, convex, irregular) and blade configuration (trianguloid and ovoid). These categories of form are distributed throughout the haft element categories. But there is a slight tendency for straight basal edges to correlate with stemmed points, and convex basal edges with corner-notched points when these two haft element categories are contrasted. There is likewise in such a comparison a tendency for trianguloid blades to be associated with stemmed points and for ovoid blades to correlate with corner-notched specimens. Since the intergrades are represented by no more than four points apiece, correlations here are meaningless except that they do not violate a thesis of morphological intergradation with the polarity suggested.

There is one other suggestion of a difference between the polar categories 2 (corner-notched) and 4 (stemmed). The

latter category includes the projectile points with the narrowest blades relative to length with a length: breadth ratio of up to 2.6:1. Since there are some very broad bladed specimens in the stemmed category, however, the **average** length: breadth ratios between corner-notched and stemmed points differ only slightly: 1.8:1 for the former, and 1.9:1 for the latter.

The last significant correlation is with regard to crudeness of manufacture. The four most poorly finished points fall together as the sole representatives of the intergrade 2.5, and this intergrade may thus simply be a function of poor manufacture.

In metrical attributes the entire series may be pooled without obscuring differences among the foregoing categories. The projectile points have a mean length of 50 mm. within a range of 29 to 66.5 mm. The lower end of the range is represented by an obviously broken and resharpened point; if it is ignored, the minimum length is 36 mm. Mean breadth is 27 mm. within a range of 14.5 to 41 mm. The lower end of the range is again represented by the broken and refinished specimen; if it is rejected as anomalous, the minimum breadth is raised to 20 mm. The average thickness is 8.5 mm. and the range is 6.5 to 14 mm. Finally, the mean weight of the North Bay points is 10.3 grams within a range of 2.7 to 21.9 grams; again, if the broken and refurbished point is set aside, the lower end of the weight range becomes 4.5 grams.

At the Porte des Morts site the North Bay points describe an intergraded or continuous series within which there is a tendency to cluster about two morphological types: corner-notched and stemmed. It is apparent that the point makers had either relaxed notions about ideal properties of projectile points or were simply not compulsive about how precisely the physical manifestation mirrored the model. This last conclusion is equally applicable to the sample of North Bay points from the Mero site. There, however, side notching was less rare and there were a few points whose bases seem to have been broken and re-chipped into a stubby, tapered stem. In metrical attributes the point collections from both sites are almost identical.

Biface Knives

There are fifty biface blades assignable to the North Bay Culture on the basis of stratigraphy, cultural associations, or both. These are identified as knives by virtue of shape and type of edge wear. Except for a single quartzite specimen, all are of cherty materials (Pl. 14, e).

The biface knives are pointed implements with straight to convex lateral edges expanding proximally to a greatest width at or near the basal edge which is straight or, more commonly, convex. They are thus trianguloid in shape or describe a basally truncated ovoid. Cross-sections are lenticular to diamond-shaped. Percussion seems to have been the dominant flaking method although pressure retouch may have been used

Plate 14. Implements: a) Copper Punches, b) Copper Awls, c) Copper Projectile Point, d) Copper Fishhooks, e) Chert Biface Knives. Length of knife at bottom: 76.5 mm.

in edge trimming. The flaking pattern itself, and the nature of the material, have resulted in quite serviceable bifaces only a few of which, however, leave the impression of being really well made. Flake-back and other indications of edge wear are non-existent, moderate, or extreme, depending on the individual specimen. A few of the heavily employed knives have battered and even crushed edges. Such indications of use do not correlate with size, cross-section, or shape.

The biface knives have a mean length of 52.5 mm. in a range of 32 to 88 mm. Maximum breadth is 18 to 49 mm. with

Plate 15. Bifaces: a) Blocked Bifaces, b) Trimmed Bifaces. Length of specimen at lower right: 76 mm.

a mean of 29.5 mm. There is a range in thickness of 6 to 18 mm. with a mean of 10.5 mm. Very similar artifacts were excavated at the Mero site as discussed below.

Trimmed Bifaces

The term "trimmed bifaces" refers to a collection of artifacts loosely clustered approximately midway on an industrial spectrum of notchless and stemless ovoid to trianguloid bifaces whose poles are labeled "biface knives" and "blocked bifaces." Since there is continuous gradation between these three loose clusters, there is a minority of specimens in the two intergrades whose assignment to one cluster or the other is strictly arbitrary. At one extreme are elementally blocked-out and obviously unfinished artifact "blanks" while the other extreme is represented by finished and functional biface tools (apparently knives). The intermediate cluster seems to represent unfinished implements, but ones which have been processed beyond the rough stage of the first group. There are forty-one whole or minimally broken specimens in this group. They are of chert (Pl. 15, b).

The trimmed bifaces are roughly ovoid to trianguloid in shape with most being difficult to characterize as one or the other; there are a few parallel-sided specimens. Basal edges are mainly convex although there are many examples of straight or irregular bases. About two-thirds have a prominent keel on one or both faces running down the middle of the blade. In quite a few cases there is a bulbous mass or swelling on one face which repeated attempts at flaking failed to reduce and whose base is marked by numerous hinge fractures. While some trimmed bifaces possibly saw employment as tools, most appear to be more or less trimmed blanks which had either proved too intractable for finishing or for other unknown reasons simply were never carried beyond their inferred stage of manufacture.

The metrical attributes of the sample of trimmed bifaces are as follows: 33-74 mm. long ($-\times$ = 52.5 mm.), 20-45 mm. broad ($-\times$ = 30.5 mm.), and 9-22 mm. thick ($-\times$ = 14.1 mm.).

Identical artifacts were discovered at the Mero site where there were similar continuities between what have been called biface knives and trimmed bifaces, and between the latter and

blocked bifaces. These distinctions were perceived at the Mero site but were labeled as stages of manufacture of biface blanks.

Blocked Bifaces

This category is made up of roughly blocked out artifacts most of which represent an initial stage of manufacture technologically antecedent to the trimmed bifaces. The thirty-three complete or easily reconstructible examples are all of chert (Pl. 15, a). They are usually quite thick in cross-section and are frequently keeled on one or both faces. Although there are a few parallel sided and trianguloid specimens, most are roughly ovate and have an irregular and untrimmed base or a minimally trimmed and convex one. Striking platforms are commonly preserved at the basal end and may be large; in one instance there is a prominent percussion cone still intact.

The blocked bifaces are mainly made from massive percussion flakes, but there are also some trimmed pebbles with considerable cortex retention. Sinuous edges are normal, and these show many short and broad hinge fractures where percussion flaking failed to bite significantly into the mass of the blade. It is possible that some of the blocked bifaces saw use as tools (some are generally similar to the biface choppers), but most appear to be unsuccessfully reduced tool blanks.

The length range of these artifacts is 34-77 mm. (— × = 55.4 mm.), breadth range is 22-52 mm. (— × = 53.3 mm.), and range in thickness is 12.5 - 27.0 mm. (— × = 19.3 mm.).

Fragments of Bifaces

The North Bay component yielded forty-one fragments (7 of these are tips) of additional blocked bifaces like those described above. They are all of chert.

Thirty-nine fragments, including five tips, of what were probably trimmed bifaces were also recovered. All are made of chert except for a single quartzite specimen.

Twenty-eight additional tip fragments of chert seem to represent trimmed bifaces and/or projectile points. It is impossible to tell which.

Flake Knives

Five North Bay chert knives are not included in the category "biface knives" despite similar function. These are min-

imally retouched, uniface knives ranging in length from 29 to 56 mm. Four are made from irregular flakes; the fifth is a fractured pebble with a thin, retouched edge. They show no modifications for hafting.

Choppers

The terms "chopper" and "hand ax" are fitting descriptive and functional labels for a distinctive class of chipped stone artifacts from North Bay cultural contexts at the Porte des Morts site although, of course, connotations of remote antiquity which these terms may illicit are wholly inappropriate. The artifacts identified as choppers seem to have filled a variety of chopping, hacking and cutting roles — and without benefit of handles or hafts (Pl. 16).

The 35 choppers are direct percussion flaked, partial bifaces made from the nodular chert locally occurring in the

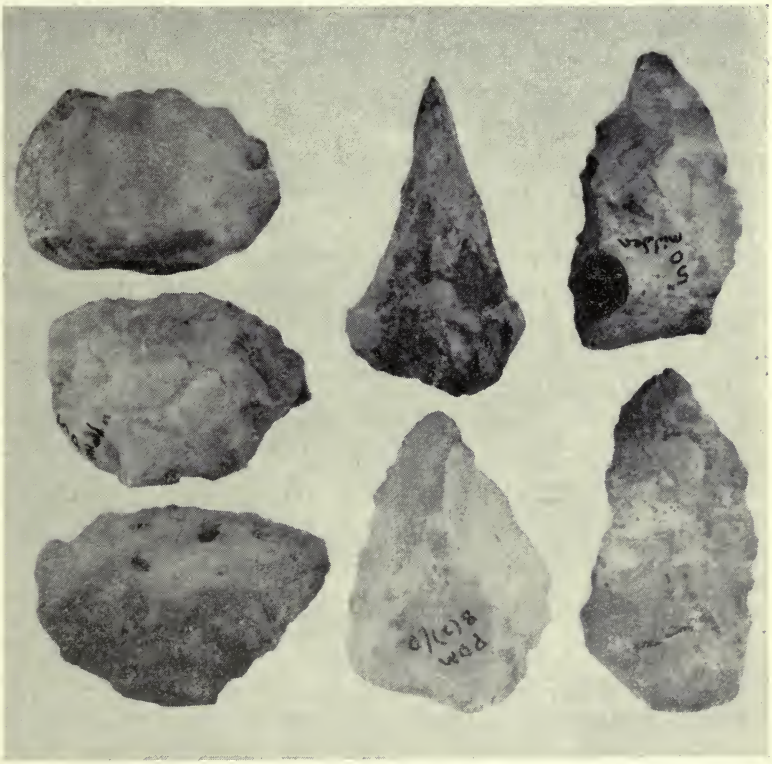


Plate 16. Choppers. Length of specimen at lower right: 71 mm.

Niagaran dolomite and from similarly derived pebbles in gravel deposits or, in some instances, from massive flakes struck from such parent materials. Sinuous edges defined by primary percussion flake scars are the norm. What first appears as secondary flaking and retouch are actually use-scars from heavy — in some cases crushing — edge employment. Unmodified nodular surfaces or unmodified pebble rind are characteristically retained back of or opposite flaked edges and surfaces. Only four specimens lack this feature.

The choppers, with but few exceptions, fall rather neatly into one of two classes: 1) roughly ovate, pointed or acuminate implements with the proximal end little or not at all modified (Pl. 16, center and right) and 2) less regularly shaped pebbles or nodular fragments with the longest suitable side flaked to procure an edge (Pl. 16, left).

In the first class are 19 specimens ranging in size from 51 mm. long by 32 mm. wide by 18 mm. thick to 82 mm. long by 50 mm. wide by 30 mm. thick. Many of these have a broad butt at the proximal end which would serve as a grip. Some are reminiscent of small Abbevillian hand-axes and must similarly have served a variety of functions.

In the second class are 11 single-edged implements varying from full (if crude) bifaces to simple pebbles or nodular fragments worked just enough to produce a sharp edge. Some of the latter are only a little more sophisticated than some Oldowan pebble-tools. The smallest of the single-edged choppers is 35 by 33 by 18 mm.; the largest is 54 by 48 by 25 mm.

The remaining five choppers differ in one or another attributes from the above and may represent secondary use of unsuccessfully trimmed tool blanks. One of these is a biface rectangle with four continuously worked edges. Except for some rind retention on one face, this core implement is completely covered with broad flake scars. It is 76 by 44 by 25 mm.

But for hammerstones, the choppers are easily the heaviest tools from the site. Their shape and degree and pattern of edge wear suggest multiple rough functions in chopping, hacking, cutting and scraping. In view of the total absence of ground and polished woodworking tools they may well have served analogously since life in a woodland environment

would almost necessitate such tools. Employment in dismembering carcasses of large animals is another, and not necessarily exclusive, alternative possibility. Probably all of these instruments were held in the palm of the hand without use of a haft, in which case the retention of unmodified pebble or nodular surfaces would make sense as a functional element of the tool design.

A very similiar, if somewhat larger, acuminate chopper was recovered from non-stratified contexts at the Mero site which, on the basis of chopper distributions at the Porte des Morts site, should relate to one of the North Bay components excavated at that station. The Mero site likewise produced no good evidence of ground or polished axes or similar implements in the North Bay Culture.

Distributional evidence at the Porte des Morts site clearly identifies the choppers as an element of the Middle Woodland North Bay Culture. Thirty-two of the 35 choppers were found in the southern sector of the site where North Bay materials were concentrated. Only the remaining three choppers came from the Late Woodland and Upper Mississippian dominated north sector, and one of these three is from a North Bay midden (the bottom level in X-unit I). In all, 33 or 94 percent of the choppers were recovered from North Bay contexts.

Scrapers

Fifty-one chert scrapers were recovered from the Porte des Morts site in clear or probable North Bay cultural contexts. Their specific form is in most cases a function of the idiosyncrasies of the parent flake and as modified by the preparation of a beveled edge. Size differences appear as an independent variable. Six readily distinguishable varieities comprise the sample: simple end-scrapers, double end-scrapers, end-scraper made from a reworked projectile point, single edged side-scrapers, double edged side-scrapers, and combination side- and end-scrapers.

Simple End-scrapers

There are 27 such implements which range in shape from trianguloid through rectanguloid to ovoid, the specific shape within this variation apparently of little consequence (Pl. 17, d). About one-fifth of the sample (6) are trianguloid while

the remainder are about evenly divided between rectanguloid and ovoid. Regardless of shape nuances, striking platforms of the original flakes are commonly retained at the proximal end opposite the beveled edge. In a few instances the bulbar end of the flake is located at the beveled edge or adjacent to it. About one-third could be described as keeled. Overall size varies from 19 mm. long by 21 mm. wide by 3 mm. thick to 45 mm. long by 34 mm. wide by 16 mm. thick.

Double End-scrapers

There are only two double end-scrapers, that is, tools with a beveled edge at both ends of the long axis of a flake. In all other attributes they are just like the simple end-scrapers described above. One of the implements is ovoid; the other is

Plate 17. Scrapers: a) Side-Scrapers, b) Combination Side-End-Scrapers, c) End-Scraper reworked from projectile point, d) End-Scrapers. Length (vertical) of specimen at lower right: 25 mm.

roughly rectanguloid (Pl. 17, d. left).

End-scraper made from a reworked projectile point

The solitary example in this category is a broken North Bay side- or corner-notched projectile point with distal end reworked into a steeply beveled, convex scraper edge (Pl. 17, c).

Single-edge Side-scrapers

Like the other side-scrapers, the eleven single edged speciments are made from the irregularly shaped flakes so characteristic of North Bay flint technology. A long flake edge was used as found (with subsequent flake-back over one face) or was trimmed back before use to achieve a bevel (Pl. 17, a). These implements are 22 by 15 by 4.5 mm. to 58 by 42 by 15 mm.

Double-edged Side-scrapers

Two scrapers are just like the foregoing except that both long edges have been beveled through use and/or trimming.

Combination Side- and End-scrapers

Eight North Bay scrapers were found incorporating bevels and use modification on two or three adjacent edges (Pl. 17, b) Because of irregularities in the flake outlines themselves, it is difficult to classify the finished artifacts using categories of shape. There is simply continuous variation from triangulоid through rectanguloid to roughly ovoid. In size they are comparable to the end-scrapers though they are not as massive as the largest of the former. At the Porte des Morts site, at least, the sample of Late Woodland and Mississippian scrapers was not sufficiently large (only six examples) to permit the identification of technological or stylistic features exclusive to the North Bay Culture as opposed to either of the latter. Cultural identification was strictly a function of provenience.

Quadrangular Implements

Eleven roughly flaked square to rectangular chipped stone artifacts of unknown function fall in this descriptive class (Pl. 12, c). Three additional specimens were found in Late Woodland or Mississippian contexts but are indistinguishable from those with North Bay provenience. The implements have more or less straight edges and they exhibit moderate to heavy use-scarring along two, three, or all four edges. The smallest specimen is only 19 mm. square while the largest is 41 by 23

mm. Most are made from the local Niagaran chert; the others could be derived from nearby gravel sources. Some, especially the smaller, more equilateral examples, at least superficially resemble gun flints but for their frequently thin and relatively fragile edges. These interesting artifacts may have been multi-purpose cutting and scraping tools which were simply turned forty-five degrees and re-mounted in a haft following edge exhaustion.

Fifteen identical implements were found at the Mero site (Mason 1966). One of these came from a North Bay stratum, one from a mixed Late Woodland and Oneota stratum, and the rest were recovered in disturbed contexts. As at the Mero site, both biface and uniface quadrangular implements were found at the Porte des Morts site. At this latter locality nine of the North Bay specimens are biface tools while two are unifaces.

Graver or Drill

A small (25 mm. long), thick, bifacially chipped tool with a stubby tip at one end which appears to have been used as a graver or as a drill was found with North Bay sherds in a small test pit. The implement must have been hafted, though the proximal end is not appreciably thinned to facilitate this.

ROUGH STONE TOOLS

Rough stone tools are represented exclusively by only five artifacts — all hammerstones. The smallest is unique in size, being only 42x24x11 mm. It is a sub-rectangular porphyritic pebble lightly battered at one end, heavily at the other. It would have made an excellent hammer for light percussion flaking.

The remaining four hammerstones are fist-size and are circular, bun-shaped, or spherical in form. Except for a granitic cobble, the material is basaltic. They show heavy battering on opposite edges or this wear is developed around the complete circumference. One specimen is lightly bi-pitted, another is pitted on one face only. Two of the hammerstones may also have seen use as grinding implements as they exhibit one or more ground facets which are difficult to explain as the result of straight hammer use.

COPPER ARTIFACTS

Seventeen artifacts or pieces of worked native copper were

recovered during excavations at the Porte des Morts site. Two of these, a flat triangular pendant and a crescentic-bladed tanged knife, were found in post-North Bay cultural contexts and need not concern us here. Fourteen specimens are from deposits assignable typologically and/or stratigraphically to the North Bay Culture. An additional specimen from a disturbed — but mainly North Bay artifact-yielding area — is probably of similar origin; this is supported by the presence of a comparable artifact in the North Bay midden in X-unit D.

Seven kinds of North Bay copper objects are distinguished: punches, awls, projectile point, fishhooks, implement fragments, hammered nugget, and sheet copper fragments.

Punches

Two "punches" — one from North Bay contexts, the other of uncertain provenience — are simply bars with square or rectangular transverse cross-sections and with a blunt, tapered end opposite a heavily lipped and battered head (Pl. 14, a). One was submitted to such force that the bar was twisted out of shape and bent; the end opposite the head shows slight lipping from the application of this force. The distortion evoked some longitudinal separation as well, indicating that the tool was fashioned by malleating a thick sheet of copper back on itself. This specimen is 30 mm. long and has a rectangular cross-section measuring, in maximum dimensions, 6 and 4 mm. respectively. The larger punch is 43 mm. long and has an almost square cross-section of 6 mm.

It is not at all apparent what these punches were used for. The possibility of their employment in indirect percussion flaking of flint artifacts is not enhanced by the quality of the finished artifacts which, rather, seem to indicate direct percussion. Besides, the lack or minimal development of end flattening suggest use on relatively soft materials.

Awls

One artifact is definitely an awl or bodkin; the other may instead have been used as a pin (Pl. 14, b). The undoubted awl is square in cross-section (7 mm.) and tapers at both ends to a sharp point, one of which may have been imbedded in a socketed handle. As each point is approached the cross-section evolves relatively abruptly to circular. This bi-pointed implement is 82 mm. long and is composed of several pieces of

metal hammered together.

The other object may also have been used as an awl, but its thickness relative to length might indicate more gentle employment — perhaps as a hairpin. It is 75 mm. long and has a 4 mm. square cross-section. One end is blunt; the other is equipped with a dull, almost spatulate tip.

Projectile Point

The single example is a small (33 mm. long, 15 mm. broad, 3.5 mm. thick) side-notched point with some bilateral asymmetry (Pl. 14, c). The blade form is intermediate between triangular and ovoid with one edge more convex than the other. Sharp V-shaped notches have been cut into the lower lateral edges. The breadth of the basal section below the notches is fully as wide as the blade above. The lateral basal edges are rounded and lobate in appearance. The edge of the base itself is straight and somewhat oblique to the long axis of the artifact. The transverse cross-section is a flattened diamond with both faces exhibiting a distinct median ridge extending from the tip to base and with flat facets on either side. The specimen weighs 4.6 grams.

Fishhooks

Three native copper fishhooks were found in North Bay contexts (Pl. 14, d). They are simple barbless hooks with more or less square cross-section grading into circular at the tip. They average about 3 or 3.5 mm. thick and, if straightened out, would range from 45 to 65 mm. in length. The hook part is a third to a half as long as the shank. One specimen has a slightly flattened end with some lipping where the line would have been fastened. This same terminus is pointed on another fishhook and is about intermediate on the third.

Implement Fragments

Two square to rectangular cross-sectioned bars appear to be fragments snapped off an awl, punch, or similar artifact either during manufacture or use. One of these is split, splayed out, and partly bent back on itself at one end.

Hammered Nugget

This is simply an irregular shaped, but flattened, piece of native copper 31 mm. in greatest dimension and 5 mm. thick.

Sheet Copper Fragments

There are four small and irregular shaped pieces of ham-

mered sheet copper which are either unfinished artifacts or the waste biproduct of tool manufacture. One of these looks like it might once have been a rolled tubular bead which was for some reason later pried open and hammered flat in the mid-section; at both ends the copper is rolled over and compressed on itself.

BONE AND ANTLER ARTIFACTS

On the criterion of provenience within the site thirty-one complete or broken artifacts of bone or antler may be confidently assigned to the North Bay occupation. These came either from physically stratified deposits (X-Unit B, its extensions, and T. P. 16) or from shallow sheet midden overwhelmingly dominated by North Bay sherds and chipped stone tools (X-unit D and T. P. 19). The bone and antler artifacts comprise toggle head harpoons, awls, needles, drifts, and a residuum of fragments of unkown function.

Toggle Head Harpoons

The discovery of nine toggle head harpoons was fortunately matched by their recovery in culturally diagnostic situations. Eight of these specimens have already been described in an article assessing their relationships with other such finds in the Great Lakes area and in which diffusion rather than local independent invention was invoked to explain their appearance (Mason 1965). Since the cited article was published, an additional basal fragment of what is almost certainly a ninth toggle head harpoon was found in rechecking collections of faunal remains from the site (T. P. 16). That these artifacts were the products of the North Bay people is proved by the provenience of every specimen (X-Unit D and X-Unit B, stratum D).

All of the harpoons are made from deer antler tines and vary from 31 to over 70 mm. long (Pl. 18, b). They are socketed and have a round line hole; this latter feature is completely above the socket or only accidentally breaks into its apex. The base is cut on the diagonal or is armed with a projecting spur. There are crudely incised lines parallel to and just above the base on two specimens.

As described in more detail in the aforementioned article, these are toggle head harpoons in the functional as well as descriptive sense of that term and they point northward in

their implication of ultimate inspiration. Similar harpoons have been found at the Heins Creek site farther south on the Door Peninsula and at the Spider Cave site on the Garden Peninsula of Michigan. Examples of copper have been recovered at the Riverside Cemetery site, Menominee, Michigan. Farther afield identical weapons have been found in northern Minnesota and western Ontario in Laurel sites. They are also known from early (early Point Peninsula) and late (Iroquois) sites in eastern Ontario and New York.

Plate 18: Bone and Antler Artifacts: a) Needles, b) Toggle Harpoon Heads, c) Drifts, d) Awls. Length of awl at lower right: 73 mm.

Awls

The twelve bone awls include two made from the ulnae of deer; these retain the proximal ends as grips. The remaining awls are pointed splinters of mammal long bones varying from well-rounded and smoothly finished implements to rough splinters ground round and pointed at one end only. It is of course possible that some of these artifacts (other than the ulna awls) may actually have been used as projectile points or as leister prongs. The term "awl" is descriptively close nevertheless and is probably functionally accurate in most cases (Pl. 18, d). The complete (but smaller) ulna awl is 71 mm. long. The two unbroken splinter awls (which also happen to be the best finished) are 96 and 127 mm. long respectively.

Needles

Two of the three needles are carefully smoothed, split deer ribs. One is a pointed section 82 mm. long and 12 mm. wide with a perforation at the broken end. The second is a mid-section with a similar hole at one end (but probably from a different specimen). These are probably netting or mat sewing needles. The third is an elongated, roughly ovoid long bone splinter pointed at one end and with a hole near the opposite end. It must also have been used in the kind of loose net or similar work suggested by the size and shape of the first two. This specimen is only 40 mm. long and is a quarter of that in breadth. The needles are shown in Plate 18 (a).

Drifts

Two large antler tines, one with a broad blunt tip, the other with a wedge shaped tip, appear to have been shaped for use as flint knapping tools (Pl. 18, c). One of these may have been intentionally hollowed out for inserting a handle. The proximal end of the other specimen is broken away.

Tool Fragments

This residual category includes two pieces of antler, two of bone, and one of turtle carapace which have been intentionally altered but which are now too fragmentary for ascertaining anything beyond this. One section of a large bird long bone, however, has a broken, thinned terminus and suggests the male member of a turkey call.

CHIPPED STONE	
prepared cores	7
projectile points	48
biface knives	50
trimmed bifaces	41
blocked bifaces	33
biface fragments	41
flake knives	5
choppers	35
scrapers	51
quadrangular implements	11
graver or drill	1
ROUGH STONE	
hammerstones	5
COPPER	
punches	2
awls	2
projectile point	1
fishhooks	3
implement fragments	2
hammered nugget	1
sheet copper scraps	4
BONE AND ANTLER	
toggle head harpoons	9
awls	12
needles	3
drifts	2
turkey call (?)	1
tool fragments	4

TABLE 4. Non-ceramic North Bay Artifacts from the Porte des Morts Site. The several categories of projectile points and scrapers have been described and are not individually listed here because of lack of space.

AGE AND CULTURAL AFFINITIES

RADIOCARBON DATING

One radiocarbon date is presently available for the North Bay occupation at the Porte des Morts site. Fortunately, it is reliable insofar as cultural association is concerned. Charred incrustrations of food residue were scraped from the interior surfaces of sherds of **North Bay Dentate** and **North Bay Linear Stamped** with some augmentation of the sample from sherds of **North Bay Plain** and **North Bay Cordmarked.** All of the sherds used for this purpose were collected from undis-

turbed North Bay cultural deposits in stratified X-Unit A (mainly stratum E, a few from the juncture of strata D and E). The sample was carefully examined under a low power (20X) binocular microscope for rootlets or other visible contamination sources and was submitted to Isotopes, Inc. for radiocarbon assay and age computation. The sample (I-888) yielded a radiocarbon age determination of 1,790 + − 100 years B. P. Using the international standard of 1950, this provided a mean estimate of A. D. 160.

While one should not be dogmatic on the basis of a single radiocarbon date, the aforementioned field conditions suggest that the estimate is probably a reliable indicator of the general conformable with chronological expectations grounded on comparisons with other sites and other archaeological sequences.

RELATIVE CHRONOLOGY OF THE NORTH BAY COMPONENTS AT THE PORTE DES MORTS AND MERO SITES

The kinds of evidence available for assessing the relative chronological positions of the North Bay components at the Porte des Morts and Mero sites — with respect to one another — are not clear when pushed beyond their indications of generally similar age. This is due to insufficiently large samples of different typological categories of North Bay pottery, particularly from stratified contexts at the Mero site, and also to uncertainties about the mechanics of deposition of the lacustrine strata at both stations. The latter problem has been discussed at length elsewhere (Mason 1966), and we simply lack the additional evidence prerequisite to a final solution.

On the hypothesis of a single period of North Bay occupation at the Porte des Morts site, the presence of lacustrine sand and gravel incorporating and overlying such cultural material in X-Unit H would indicate that the component predates the North Bay II components at the Mero site — assuming the correctness of the stratigraphic correlations suggested there — and could be at least as old as the North Bay I component found under similar geomorphic circumstances. Unfortunately, the extremely limited material from such provenience at the Porte des Morts site is undiagnostic except for the

North Bay ware characteristics of the sherds — and none of these bore decoration.

Contrary to the chronological consequences of the foregoing hypothesis, the typologies of the assemblages in question are more conformable with the thesis that the material from X-Unit H represents one component and the other North Bay material (about 99% of the total) represents another, and later, north Bay occupation. Typological considerations suggest first, that no great hiatus separates the North Bay component (No. 2) at the Porte des Morts site from those at the Mero site and, second, that such age difference as there may be indicate temporal priority for the latter. These considerations follow.

1. There is a decrease in the frequency of dentate stamping between the pooled Mero site sample (24.7% of the estimated vessels) and the Porte des Morts site (18.6% of estimated vessels).

2. Conversely, there is a corresponding increase in the frequency of cord-wrapped-stick decoration between Mero (7.4% of vessels) and Porte des Morts (24.0% of vessels). It is believed that these trends are functionally contingent on each other on the thesis that the cordwrapped-stick technique evolved out of and then replaced dentate stamping. This is supported by indications of North Bay-Heins Creek developmental trends: the early Late Woodland Heins Creek ware has a high incidence of cordwrapped-stick decoration but no dentate stamping (see Mason 1966). Similar replacement of dentate stamping by cordwrapped-stick is attested in the Havana-Weaver transition in Illinois, by directly analogous sequences in eastern Iowa, in the Point Peninsula-Owasco continum in eastern Ontario and New York, and in the Laurel-Black Duck transition in northern Minnesota and western Ontario.

3. If the Porte des Morts North Bay component is the latest of these considered, the relative frequencies of plain and cordmarked surfaces are consistent with the weak stratigraphic/quantitative evidence at the Mero site of a trend toward increasing popularity of plain surfaces at the expense of cordmarking between the North Bay I (earliest) and North Bay II (latest) components: 54.0% in the former, 60.6% in the

latter, and 78.4% at Porte des Morts. This can only be a tentative suggestion inasmuch as the stratigraphically pertinent samples of undecorated plain and cordmarked sherds at the Mero site are small (333 and 363, respectively, with North Bay IIa and IIb merged). The same kind of trend has been suggested for the Havana series in Illinois (Griffin 1952).

4. **Dane Incised** sherds, so far linked to the Middle Woodland horizon on the Door Peninsula, have typological affinities in the Early Woodland of Illinois: **Black Sand Incised.** while a minority type at the Mero site (6.2% of the estimated vessels), this pottery is totally absent at the much richer Porte des Morts site. Such an interpretation of the typological affinities and chronological significance of this incised-over-cordmarked pottery is unfortunately complicated by repeated evidence of incised-over-cordmarked pottery in Late Woodland sites west as well as south of the peninsula (for example, Barrett and Skinner 1932).

5. In Woodland sequences in the Midwest high frequencies of side-notched projectile points are generally somewhat earlier than high frequencies of corner-notched points. Although samples are again small, side-notched points are definitely more important at the Mero site.

Because of the sampling problems already mentioned, the argument that the North Bay occupation at the Porte des Morts site (here ignoring the possibly separate component in X-Unit H) is the most recent of the known components of that culture can only be endorsed with mild enthusiasm. It is additionally evident from the pottery and stone inventories that all of the North Bay components are not far separated in time and possibly record a time span of only one, two, or three centuries. Therefore, the radiocarbon date from the Porte des Morts site not only provides an age estimate for the North Bay material at that site but also may be taken as indicating the general order of age of the North Bay Culture on the Door Peninsula. The date falls in about the middle of what I believe the North Bay time range to be: that is, the first few centuries A. D. The reasons for this estimation have been presented in the report on the Mero site excavations (Mason 1966). The evidence from the Porte des Morts site,

considered independently of the compatible radiocarbon data, lends further support.

CULTURAL AFFINITIES OF THE NORTH BAY CULTURE

Havana - Hopewell

It has been apparent since the excavation of the Mero site that the North Bay Culture has connections with Hopewellian (Havana tradition) in the southern and western portions of Wisconsin and in Illinois. The Porte des Morts site reinforces this view. North Bay by no means represents a northern variety of Hopewellian, but there are enough correspondences between North Bay ware and Havana ware as well as between certain components of the associated chipped stone industries —notably projectile points—to establish some sharing of cultural antecedents in addition to the maintenance of some kind of contact. These similarities (and differences) have been explored in the Mero site report and need not be reviewed again.

Probably the chief contribution of the Porte des Morts site in assessing North Bay-Hopewellian relations is in the presence of an actual Hopewell ware vessel in the North Bay midden. Certainly carried or traded in from Illinois, this leached limestone tempered rocker stamped vessel indicates again the coevality of the North Bay Culture and the late (as opposed to early) period of Hopewell ware manufacture in Illinois. This is of course congruent with the radiocarbon date.

The Anderson-Nutimik Sequence

In southeastern Manitoba the Anderson and Nutimik foci have been prosposed as regional and subsequent Middle Woodland manifestations (MacNeish 1958). These complexes are related to Laurel as described in northern Minnesota and Western Ontario and, in more attenuated fashion, to the Saugeen Focus and some parts of the Point Peninsula continuum farther east, to Hopewellian assemblages in the midwestern United States, and to North Bay in northeast Wisconsin. These latter parallels are of interest here.

According to MacNeish the Anderson Focus embraces the earliest pottery so far known in Manitoba. Much of the stone industry is directly derived from the immediate antecedent

Late Archaic (Larter Focus) and includes broad-bladed, corner-notched projectile points not dissimilar to the North Bay specimens. Called **Anderson Corner-notched,** these occur in sites of the Larter, Anderson and Nutimik foci and are the dominant type in the last two. **Whiteshell Side-notched** points are again like some of the side-notched forms from the Mero site and are best known in the Nutimik Focus. The samples are woefully small, however, (4 points for the whole Anderson Focus, 16 for Nutimik), and are minimally useful for comparative purposes. Ovoid bifaces, known mainly from fragments, are found in both Anderson and Nutimik contexts and bear comparison to the much more numerous North Bay biface knives and trimmed bifaces. But these are technologically simple artifacts and mere statements of resemblance do not mean very much. Similarly, small triangular plano-convex end-scrapers are another shared trait. However, dividing the class "scrapers" into end- and side-varieties, the former are more common in North Bay while just the reverse holds in Anderson; in Nutimik sites they are nearly equal. Samples from the Manitoba series are again limited and these comparisons should not be used uncritically. There is nothing to compare with the North Bay choppers. Except for a broken ground adze in Nutimik, ground and polished stone artifacts are absent in all three complexes.

Copper tools are not reported for either the Anderson or Nutimik foci and the meager complement of bone and antler affords no test of affinity beyond the simple sharing of split bone awls.

It is in the pottery that some comparative precision is possible. The earliest Manitoba pottery is assigned to the Middle Woodland Period (Anderson Focus initially), there being nothing really comparable to Early Woodland ceramics as known farther east. The major types are grit tempered and decorated on a plain vessel surface with end-to-end rectilinear punctates **(Lockport Linear),** dentate stamping (much of this classifiable as **Laurel Dentate),** and cordwrapped-stick **(Lockport Cord-wrapped Stick).** These types continue into the somewhat later Middle Woodland Nutimik Focus with the difference that cord roughened vessel surfaces are a little more common, dentate stamping is less frequent, and the type

Lockport Cord-wrapped Stick is much more popular and sometimes incorporates rocked cordwrapped-stick impressions. Additionally, the Nutimik complex yields a few smooth-surfaced sherds with an exterior wash of red ocher; knotted net-impressed sherds; some incised pottery, occasionally with associated plain rocker stamping; **Laurel Linear Stamp** pottery (not end-to-end as in **Lockport Linear**); and pseudo-scallop shell decorated sherds. These last two varieties are subsumed by MacNeish under the rubric **Nutimik Oblique.**

The strongest ceramic continuities between North Bay and the Manitoba Middle Woodland sequence involve **Laurel Dentate, Lockport Cord-wrapped Stick, Nutimik Oblique** (sic) and, less clearly, varieties of **Lockport Linear.**

Laurel Dentate, as described and illustrated for the Anderson focus in Manitoba and the Laurel Focus in Minnesota and Western Ontario, is clearly a close relative of **Vinette Dentate** in eastern Ontario, New York, and adjacent New England, and has unmistakable affinities with **North Bay Dentate.** As reviewed elsewhere (Mason 1966), the latter also shows some correspondences with dentate stamped Havana ware. **North Bay Cord-wrapped Stick** is similar enough to assert cousin if not sibling status with **Lockport Cord-wrapped Stick** with the following qualifications: the latter differs in higher frequencies of cordmarked vessel bodies, in the sometime rocking of the cordwrapped dowel or paddle edge, and in the higher incidence of rim punctates.

The typological travesty, **Nutimik Oblique,** is said to occur almost exclusively in the Nutimik Focus. As described and illustrated (MacNeish 1958: 150-1 and Pl. XV, figs. 4, 6-10), it appears that the "type" includes pottery now classifiable as **Laurel Linear Stamp** and **Laurel Pseudo-scallop Shell.** These types have relatives in **North Bay Linear Stamped, Becker Punctate,** and **North Bay Scallop.** With the advantage of recent work at our disposal it is now possible to correct MacNeish's statement about distributions and to assert that similar pottery (similar to **Nutimik Oblique**) is known from Manitoba and southeast Ontario.

A minority representation of **Becker Punctate** at the Mero site is the closest North Bay analogue to **Lockport Linear,** particularly in approaching and sometimes achieving the end-to-

end arrangement of the linear punctations characteristic of that type. Incidentally, **Lockport Linear** is not as similar to **Laurel Linear Stamp** as are some examples of **Nutimik Oblique,** despite the terminology.

Finally, it is essential to note that despite otherwise clear Laurel affinities the Anderson and Nutimik foci completely lack, along with North Bay, rim bosses or raised nodes and that Laurel lacks the cordwrapped-stick impressed pottery so important in North Bay, Anderson, and Nutimik. It is already evident from the foregoing that the observed parallels and convergences reflect a more complicated history than regional diversification of a single root culture.

The Laurel Focus

There are enough specific similarities, supported by a sufficiently imposing body of general correspondences, to reinforce the view that the North Bay and Laurel cultures not only shared partial ancestry but that there was considerable diffusion between them.

Shared non-ceramic traits include the distinctive socketed toggle head harpoon, an artifact presumably of ultimate Arctic inspiration (Mason 1965); overlapping projectile point varieties, particularly with broad blades and side-to corner-notching but with North Bay tending to be larger and heavier; extreme rarity of ground stone implements; and, less diagnostically, copper awls and "mat sewing" needles of rib bone. There are also convergences in certain biface blade, knife and scraper formers although at present these remain less critical for comparative purposes. Like Anderson and Nutimik, propectile points have low frequencies on Laurel and North Bay sites relative to sherd counts.

In pottery, Laurel and North Bay share pseudo-scallop shell stamping **(Laurel Pseudo-scallop Shell/North Bay Scallop),** though this decorative mode is much more common in Laurel; both simple and complex stab-and-drag **(Laurel Push and Pull/** un-named North Bay types), again much more typical of Laurel; dentate stamping **(Laurel Dentate/** some **North Bay Dentate)** — this is much rarer in Laurel and only a minority of North Bay Dentate sherds are closely similar to **Laurel Dentate;** triangular variety of dentate stamped imprints (as on **North Bay II Dentate);** stamping with a bar-shaped or other

linear element (**Laurel Linear Stamp / North Bay Linear Stamped** and some versions of **Becker Punctate**); rarity of incised pottery; and rarity of rocker stamping.

Important discrepancies include the repeated presence of rim nodes or bosses in Laurel in contrast to their total absence in North Bay; extreme rarity if not absence of cord-wrapped-stick decoration in Laurel; extreme rarity of cordmarking and, conversely, marked prevalence of plain surfaces in Laurel; rare occurence of red ocher wash on Laurel sherd exteriors; and, of course, paste differences. While decoration is generally comparable, it tends to be more precisely executed in Laurel with solid areas of stamped imprints; in North Bay more space tends to intervene between parallel stamps — in this and some other ways North Bay pottery diverges from Laurel and approaches Havana.

Non-ceramically, we may note the common occurrence of paint-stone nodules on Laurel sites and their absence in North Bay; the simple copper fishhook of the North Bay Culture has not been reported in Laurel whereas both copper gorges and the composite fishhook with copper barb, unknown in North Bay, are both present in Laurel. Due to failure to find or identify North Bay burial places, the mounds and other mortuary features of Laurel cannot be used for comparison.

It is noteworthy that there is neither direct or indirect evidence of agriculture in either Laurel or North Bay (or in Anderson or Nutimik). Both hunting and fishing were important with seasonally occupied camps and villages situated on rivers and along lake shores. Although it remains to be demonstrated with additional pertinent sites, it appears likely that such villages broke up in the winter months into small, nomadic hunting groups. The far-flung, transient winter camps which normally would yield little or no pottery may prove difficult of both discovery and correct cultural identification.

The Laurel Culture is yet to be bracketed in time. The radiocarbon date of A. D. 1 for the Heron Bay site on the Pic River on the north shore of Lake Superior (Wright, personal communication) is probably acceptable for an early phase of Laurel. The Sand River site (CiIe-1) on the northeast shore of Lake Superior, Ontario, has provided a radiocarbon date of A. D. 320 + — 100 years (M-1507). The dearth of additional

Laurel dates might be partially offset if reliable dates were available for components of the Malmo Focus in central Minnesota. This is thought to be the nearest relative of Laurel in the state and to be culturally intermediate between Laurel and Howard Lake (with Havana derived pottery) and thus, presumably, of comparable age (Wilford 1955). Unfortunately, the three available Malmo dates (I-786, 1-787, and I-788) encompass a meaningless span of one and a half millenia (including the statistical margins of error) from almost 900 B. C. to about A. D. 600 (Johnson 1964).

The Saugeen Focus

On the Ontario peninsula James V. Wright has identified and named the Saugeen Focus (Wright and Anderson 1963, Wright n. d.). Components include the Donaldson site, the Inverhuron site, and the lowest stratum of the Burley site — all on Lake Huron south of the Bruce Peninsula, the Newman site on Lake Erie and the Short site on Lake Ontario. The most important of these is the Donaldson site, Bruce County, Ontario. The Saugeen Focus represents a regional Middle Woodland cultural complex analogous to North Bay but with stronger northern — and weaker southern — cultural ties. It seems to represent the earliest ceramic complex in parts of southern Ontario and should be contemporary with part of the Laurel and Point Peninsula sequences. There should similarly be a general magnitude of coevality between Saugeen and North Bay.

Saugeen shares with North Bay generally similar vessel forms and rim shapes, significantly overlapping decorative techniques and styles, a tendency to irregular or haphazard application of decorative devices, heavy use of designs emphasizing rim-encircling parallel lines commencing on the upper rim or beneath vertical or oblique or criss-cross lines, and a relatively poor paste with heavy tempering that finds closest parallels in northeastern Early Woodland wares (e. g., Vinette 1). Other important parallels in pottery include dentate stamping as a major decorative mode, pseudo-scallop shell stamping (much more frequent in Saugeen), low incidence of incising, absence of exterior bosses, minority presence of stab-and-drag decoration, and the presence of some sherds with annular punctations.

Despite the convergences just noted, there are obvious disparities between the two cultures: rocker stamping, so rare in North Bay, is a major element in Saugeen (notably rocked dentate); interior channeling or striating from surface smoothing is common in the Canadian sherds (as in Point Peninsula); Saugeen shares with Rainy River (Laurel and the Manitoba foci) occasional red ocher washed sherds; cordmarked vessel surfaces are common in North Bay, rare in Saugeen, punctating is much less common and varied in the latter and linear stamping is rare. * Certainly one of the most striking differences is the virtual absence of cord-wrapped stick decoration. in Saugeen.

With the qualification that samples are limited, many of the side- and corner-notched Saugeen Focus projectile points resemble North Bay specimens and are of comparable size. These similarities include departures from bi-lateral symmetry and other signs of unimposing flint knapping. The three triangulоid points (sic) from the Donaldson site are unique, neverthless. Once again, site yields in projectile points tend to be light. Scraper varieties, though loosely defined, are generally consonant. While not nearly as common, Wright has identified choppers at the Donaldson site (Wright and Anderson 1963: Pl. XXI, 13-15); these appear to resemble biface blanks in some cases, and these are both nodular and pebble forms. Bi-polar core usage is another shared trait and some of the Saugeen "rectangular cores" are reminiscent of North Bay "quadrangular implements" (compare Pl. 12, c, and Wright and Anderson 1963: Pl. XXI, 6 and 7). Parallel-sided flakes or "blades" are rare in both complexes.

In copper and in bone and antler, parallels are sufficiently non-distinctive to be minimally informative in questions of cul-

* Wright identifies "linear punctate" in certain Canadian nottery groups (n. d., personal communication). This refers to the same decorative technique Wilford (1941, 1955) has called "simple push and pull" in Minnesota. This is not the same as "linear stamping" (see Pl. 6). Wright's "linear punctate" and Wilford's "simple push and pull" is a toothless version of what Wright calls "dragged stamp," Wilford calls "complex push and pull," Ritchie and MacNeish (1949) call "complex dentate," and I call "complex stab-and-drag."

tural descent and diffusion. An exception to this is the sharing of the socketed toggle head harpoon. A possibly meaningful disparity, if not simply a function of sampling, is the apparent absence of simple copper fishhooks in Saugeen(and also in Laurel).

The most conspicuous incongruities include the low incidence of bifaces in Saugeen as compared with their abundance in North Bay (biface knives, choppers, blocked and trimmed bifaces) and, conversely, the presence in the former of flaked and pecked celts and possible adzes. Also unique to the Saugeen Focus are grinding stones (manos and a sandstone slab), netsinkers, birdstones (?), ground and polished slate gorgets, copper beads and a copper celt or axe. Some of these differences may disappear when North Bay burials are located.

Running counter to the indications of at least partial contemporaneity of the North Bay and Saugeen complexes are the presently available radiocarbon dates. These dates are S-119 (530 B. C. + − 60 years) for the Donaldson site and C-192 (669 B. C. + − 220 years) for the basal component containing Saugeen sherds at the Burley site (Jury and Jury 1952, Wright and Anderson 1963: 50). Wright has reasonably rejected as far too recent another Donaldson site date of A. D. 1225 + − 50 years (S-118). Unlike Wright, I would also reject the first two dates **as dating the Saugeen occupations** at these sites. They are out of line (by about half a millenium) given the radiocarbon chronology and the related structure of typologically extrapolated cross dates for Middle Woodland everywhere else in North America. They are likewise incompatible with Wright's proposed derivation of Saugeen from Laurel whose only radiocarbon dates are A. D. 1 and later. Hopewellian intrusions into New York and Ontario do not appear to pre-date the first few centuries A. D. and its postulated role in an amalgamation with an eastward diffusing Laurel complex to produce Saugeen is thus also contradicted by these two dates. Similarly vitiated are compelling typological ties placing Saugeen and some part of the Point Peninsula sequence in New York and Ontario into temporal equivalence. Ritchie in fact even refers to the Saugeen components as "Early Point Peninsula" (Ritchie 1965: 205). As far as I can see, the modifier "Early" has nothing to do with

a typological or stratigraphic sequence but is contingent solely on the early dates. All of the radiocarbon dated Point Peninsula sites — this excludes the Saugeen components — are dated to this side of A. D. 1. The earliest known date for the infusion of Hopewellian elements into Point Peninsula is provided by the Lewiston Mound in Niagara County, New York (Ritchie 1965: 215-17). This date is A. D. 160 + — 80 years (Y-1276).

Point Peninsula

North Bay cultural affiliations with the Point Peninsula sequence in New York and eastern Ontario have already been explored in some detail (Mason 1966). Since that writing, Ritchie has revised his terminology and this discussion will merely update my suggested correlations in that regard.

In the new terminology (Ritchie 1965) the pertinent developmental divisions of Point Peninsula — those which may profitably be compared to North Bay — are the Early to early Middle phases. These include the Canoe Point into very early Kipp Island phases as well as the Squawkie Hill phase. What Ritchie now calls Late Point Peninsula (the Hunter's Home phase) could also be called, as he allows, nascent Owasco. This is much more similar to the Heins Creek Complex of the Door Peninsula than to North Bay. The radiocarbon dates on Heins Creek and Hunter's Home are compatible.

SUMMARY AND INTERPRETATIONS

As a conceptual counterpoise to the idea of a great Hopewellian "inter-action sphere" of discrete regional traditions (Scioto, Havana) variously affected by Hopewell diffusions in the territory south of the Great Lakes (Caldwell 1964; Prufer 1964, 1965; Struever 1964, 1965), it is now possible to visualize a northern tier of non-Hopewellian Middle Woodland cultures north of the lakes. As several archaeologists have long pointed out — the most recent restatement by Ritchie (1965) — there is in many particulars greater homogeneity between Manitoba and the St. Lawrence Valley and northern New England than is true of much lesser distances north and south. The dividing line undulates, however, and embraces a cultural tension zone incorporating the local interpenetrations of the two "tiers." The terms Point Peninsula

or Point Peninsula-like have been used to describe this northern complex. Fitting has recently formulated the term "Lake Forest Middle Woodland" to embrace a large part of this continuity and has attempted to articulate it with ecological factors (Fitting 1965).

The northern tradition appears to have less time depth than the southern and is complimented by a correspondingly longer survival of Archaic cultures. Although initial Middle Woodland time slopes are comparable with a thesis of south to north diffusion, the typologies of the respective traditions are at present difficult to account for simply by that mechanism alone. It is in the south that the best developmental sequence is known and, except for southeastern Ontario where there are weak and sporadic clues, a developmental Early Woodland stage is not only lacking in the north but, given the non-ceramic clues of local continuity with preceding Archaic complexes, is not generally to be expected.

Sites of the northern tier of Middle Woodland are spread from eastern Saskatchewan to the maritime provinces and northern New England but dip southward into parts of Minnesota, Wisconsin, Michigan and New York. Occurring on rivers and lakes, the excavated sites from Manitoba to Quebec and New York suggest seasonal encampments of hunters and gatherers with locally heavy reliance on fishing and with no direct or even inferential evidence of agriculture. Pits and postmolds are usually rare. Except for the northern Atlantic littoral and its hinterlands these sites usually have few ground and polished stone artifacts, have only rare heavy stone implements other than hammerstones and flaked choppers, and are characterized by relatively restricted numbers of projectile points — mainly of side- or corner-notched varieties and of unimposing workmanship. Other than toggle head harpoons, beaver incisor chisels, and the common occurrence of small numbers of simple or composite copper fishhooks, the tool inventory of northern Middle Woodland sites is not particularly distinctive when viewed from the south.

What is most distinctive of the Anderson-Nutimik-Laurel-Saugeen-Point Peninsula continuum is of course the pottery. This is characterized by pseudo-scallop shell, simple and complex stab-and-drag, linear stamping and, rarely, but with some

persistence, red ocher filming. Combined with this in highly variable locally exclusive and frequently perplexing ways are such "southern" shared attributes as dentate stamping, cordwrapped-stick impressing, corded stamping (pseudo-dentate), rocker stamping, incising, punctating (including annular punctations), and raised bosses. Cordmarking north of the Great Lakes is much less common versus plain or smooth surface treatment and appears to gain the ascendancy through time.

As indicated by the foregoing, the idea of a great Middle Woodland culture area with its implications of intra-areal diffusion exceeding in importance diffusion from southern areas is enormously complicated by presently inexplicable discontinuities in certain elements of importance for studies of cultural classification and derivation. To be sure, some of the discontinuities are to be attributed to very inadequate sampling and to the fragility of chronological controls whereby comparative studies are handicapped. An example of such a discontinuity is the presence of burial mounds in both Minnesota Laurel and in New York and southeastern Ontario Point Peninsula with none reported in the intervening territory even though habitation sites have been located.

In ceramics certain incronguities seem to reflect real discrepancies even though they may be somewhat magnified by sketchy sampling over enormous distances. For example, it does appear to be the case that rim bosses, so common in Laurel, are absent entirely or are exceedingly rare in the Anderson and Nutimik foci to the west and in Saugeen and Point Peninsula to the east. Cordwrapped-stick impressed pottery is fairly common in Anderson, Nutimik and Point Peninsula, rare in Saugeen, and absent or conspicuously rare in Laurel. Linear stamping, pseudo-scallop shell and stab-and-drag are more characteristic of Laurel than Point Peninsula. Rocker stamping, though unevenly represented in the latter, is certainly much more common than it is in Laurel where it is either rare or absent. And equally important are differences in artifact distributions and relative frequencies between neighboring regions occupied by sites presently classified in the same archaeological culture. Thus Wright has recently pointed out in Point Peninsula sites in New York rocker

stamping is frequently present in high percentages in counts of decorated sherds whereas pseudo-scallop shell stamping is much less common; in the neighboring region of southeastern Ontario the reverse is the rule with pseudo-scallop shell decoration far more characteristic than rocker stamping (Wright n. d.). Although chronogolical considerations are certainly involved, it is apparent in this case that the shifts in relative frequencies are clinal and probably explicable in the macrocosm of eastern North American prehistory in which the cultural "center of gravity" of rocker stamping is south of that for pseudo-scallop shell stamping. But this example is important in illustrating a phenomenon that is to be expected elsewhere in the "northern tier" as well.

The North Bay Culture seems to exemplify the "cultural tension zone effect" alluded to earlier. The Malmo Focus in Minnesota may be another example. There are strong indications in both of southern ties — indications which imply a more or less sustained though essentially marginal involvement with the Illinois-centered Havana tradition and even with the specifically Hopewell elements interacting with it. Indeed, a case can be made for even early Woodland influences exerting a weak impetus over a northerly tilted time-slope on the compound origins of the North Bay Culture. Early Woodland elements, or ones reminiscent of them (Marion Thick or Vinette 1-like paste, incised-over-cordmarking, annular punctates), particularly as they have been worked out in the Illinois and Ohio valleys, become markedly thin and disjunct in their distribution north of southern Wisconsin and appear in what, in the south, would be Middle Woodland time levels. With future documentation this could prove to be a surprisingly untarnished demonstration of classic age-area theory. Ii conformity with the foregoing, it appears that pre-pottery Archaic complexes survived into later times than has been shown in the south. A similar model may prove widely applicable in Canada where Wright has argued for the direct succession of Middle Woodland over Archaic cultures along the north shores of lakes Superior and Huron (Wright 1963).

Since North Bay connections with the Havana tradition and Hopewellian have been expored elsewhere (Mason 1966), it need only be stated that these connections are as strong as

those, for instance, with Point Peninsula. There is an attenuated but general Havana cast to much of the North Bay pottery, especially in the dentate and cord-wrapped-stick types as well as in some of the punctated sherds, and there are also convergences in projectile point styles. At the Porte des Morts site, of course, there is direct proof of Hopewell influence in the trade vessel. As pursued in the earlier discussion, the clues point to the last half of Havana and Hopewellian development rather than to an earlier period. This is supported by radiocarbon dating.

Cultural boundaries are rarely susceptible of sharp demarcation over long distances. Moreover, the frontiers between major cultural areas do not always simply intergrade in random fashion to produce assortments of things from here and there. The North Bay Culture is a distinctive, cohesive archaeological complex reflecting what was surely a functionally integrated society. It was sufficiently adapted to the woodland-lacustrine environment of northeastern Wisconsin and was sufficiently viable to leave its stamp on the early Late Woodland cultural groupings of the same region. What is just as important about North Bay is that it clearly reveals a complicated history of not only derivation from, but variably continuing influences out of multiple cultural hearths. It is both a southern and marginal expression of the "northern tier" Middle Woodland cultures and a far northern and also marginal relative of Havana-Hopewellian. It is both, depending on analytical focus, but not simply either. North Bay reflects a developmentally continuous acculturation of southern and northern elements integrated into a regionally distinct and temporally delimited entity.

Finally, it is a plausible hypothesis, hopefully resolved through future field work, that the "cultural tension zone effect" will prove concordant with a floristic tension zone habitat during the pertinent time levels concerned. At the present time the known distribution of North Bay lies north of the northwest-southeast trending tension zone as mapped by phytogeographers (Curtis 1959). A review has been made of the evidence suggesting that the northward expansion of Hopewellian coincided with a climatic episode somewhat more condusive to agriculture than that which accompanied

the subsequent decline and disappearance of Hopewellian in the north (Griffin 1960). With the relatively minor climatic fluctuation Griffin has postulated it is expectable that the tension zone between the northern and southern floral provinces in Wisconsin — and, of course, their associated faunas — would have shifted somewhat to the north. If this in fact happened, the North Bay Culture may testify to an ecological relationship between transitional cultural characteristics and an analogous habitat with Havana-Hopewellian to the south and the northern tier of contemporaneous Middle Woodland cultures then, as now, to the north.

REFERENCES CITED

Barrett, Samuel A., and Alanson B. Skinner
1932 **Certain Mounds and Village Sites of Shawano and Oconto Counties, Wisconsin.** Bulletin of the Public Public Museum of the City of Milwaukee, Vol. 10, No. 5.

Caldwell, Joseph R.
1964 "Interaction Spheres in Prehistory." **In** Caldwell and Hall 1964: 133-143.

Caldwell, Joseph R., and Robert L. Hall, editors
1964 **Hopewellian Studies.** Illinois State Museum Scientific Papers, Vol. 12. Springfield.

Curtis, John T.
1959 **The Vegetation of Wisconsin; an Ordination of Plant Communities.** The University of Wisconsin Press. Madison.

Deuel, Thorne, editor
1952 **Hopewellian Communities in Illinois.** Illinois State Museum Scientific Papers, Vol. 5. Springfield.

Fitting, James E.
1965 "Middle Woodland Manifestations in Eastern Michigan." Paper presented at the 30th Annual Meeting of the Society for American Archaeology. Urbana.

Griffin, James B.
1952 "Some Early and Middle Woodland Pottery Types in Illinois." **In** Deuel 1952: 95-129.
1960 "Climatic Change: a Contributory Cause of the Growth and Decline of Northern Hopewellian Culture." **The Wisconsin Archeologist,** Vol. 41, No. 2: 21-33. Lake Mills.

Johnson, Elden
1964 "Twenty New Radiocarbon Dates from Minnesota Archeological Sites." **Minnesota Archaeologist,** Vol. 26, No. 2: 35-49. Minneapolis.

Jury, Wilfred, and Elsie Jury
1952 **The Burley Site.** University of Western Ontario, Museum of Indian Archaeology and Pioneer Life, Bulletin No. 9. London.

MacNeish, Richard S.
1958 **An Introduction to the Archaeology of Southeast Manitoba.** National Museum of Canada, Bulletin 157. Ottawa.

Mason, Ronald J.
1965 "Wisconsin Middle Woodland Toggle Head Harpoons." **The Michigan Archaeologist,** Vol. 11, Nos. 3-4: 156-164. Ann Arbor.
1966 **Two Stratified Sites on the Door Peninsula of Wisconsin.** Museum of Anthropology, The University of Michigan, Anthropological Papers No. 26. Ann Arbor.

Neumann, Georg K., and Melvin L. Fowler
1952 "Hopewellian Sites in the Lower Wabash Valley." **In** Deuel 1952: 175-248.

Prufer, Olaf H.
1964 "The Hopewell Complex of Ohio." **In** Caldwell and Hall 1964: 35-83.
1965 **The McGraw Site: a Study in Hopewellian Dynamics.** Scientific Publications of The Cleveland Museum of Natural History (New Series), Vol. 3, No. 1.

Quimby, George I.
1965 "Exploring an Underwater Indian Site." **Chicago Natural History Museum Bulletin,** Vol. 36, No. 8: 2-4.

Ritchie, William A.
1965 **The Archaeology of New York State.** Natural History Press, The American Museum of Natural History. New York.

Ritchie, William A., and Richard S. MacNeish
1949 "The Pre-Iroquoian Pottery of New York State." **American Antiquity,** Vol. 15, No. 2. 97-124. Menasha.

Stoltman, James B.
1962 "A Proposed Method of Systematizing the Modal Analysis of Pottery and its Application to the Laurel Focus." M. A. Thesis, University of Minnesota.

Struever, Stuart
1964 "The Hopewell Interaction Sphere in Riverine-Western Great Lakes Culture History." **In** Caldwell and Hall 1964: 85-106.
1965 "Middle Woodland Culture History in the Great Lakes Riverine Area." **American Antiquity,** Vol. 31, No. 2: 211-223. Salt Lake City.

Wilford, Lloyd A.
1941 "A Tentative Classification of the Prehistoric Cultures of Minnesota." **American Antiquity,** Vol. 6, No. 3: 231-249. Menasha.
1955 "A Revised Classification of the Prehistoric Cultures of Minnesota." **American Antiquity,** Vol. 21, No. 2: 130-142. Salt Lake City.

Wright, James V.
1963 "An Archaeological Survey Along the North Shore of Lake Superior." **Anthropology Papers, National Museum of Canada,** No. 3. Ottawa.

n.d. **The Laurel Tradition and the Middle Woodland Period** (manuscript).

Wright, James V., and James E. Anderson
1963 **The Donaldson Site.** National Museum of Canada, Bulletin No. 184. Ottawa.

A COPPER 'GAFF HOOK' FROM ONTARIO

by

Jack Steinbring

The History

On August 4, 1884 a western advance of the Canadian Pacific Railway found itself stopped by a granite outcropping near the banks of the Pic River, about four miles north of that river's mouth. Operations were commenced to remove this obstacle. A reduction of the west exposure of the outcrop revealed a deep fissure, between two high nodes. The fissure was filled with water deposited clay to a depth of eighteen

MAP 1. Upper Great Lakes, showing distribution of copper hook-like objects (symbols indicate actual numbers).

feet, on top of which were about two feet of gravel. At the bottom of this clay-filled fissure, a workman discovered a large copper hook, and fragments of charcoal. After testing the strength of the hook, and breaking off about four inches of it, the workman presented his find to Mr. H. W. D. Armstrong, the Division Engineer. Mr. Armstrong immediately inspected the point of recovery, and later made drawings to record it.

Before the end of August, Mr. Armstrong forwarded the artifact **(Figure 1)**, along with a profile **(Figure 2)** and ground plan **(Figure 3)**, to Dr. Charles Napier Bell, an antiquarian at Winnipeg, Manitoba. Dr. Bell was very impressed by the find and forwarded a photograph of the hook to the Canadian Antiquarian and Numismatic Journal. The photo was published, but the antiquity of the artifact was officially doubted in a letter to Dr. Bell from Mr. R. W. McLachlan

FIGURE 1. Copper hook-like object found beneath deep clay deposit during railroad construction along the Pic River, Ontario, 1884. An original photograph, donated to the Manitoba Museum by Dr. F. G. Bell.

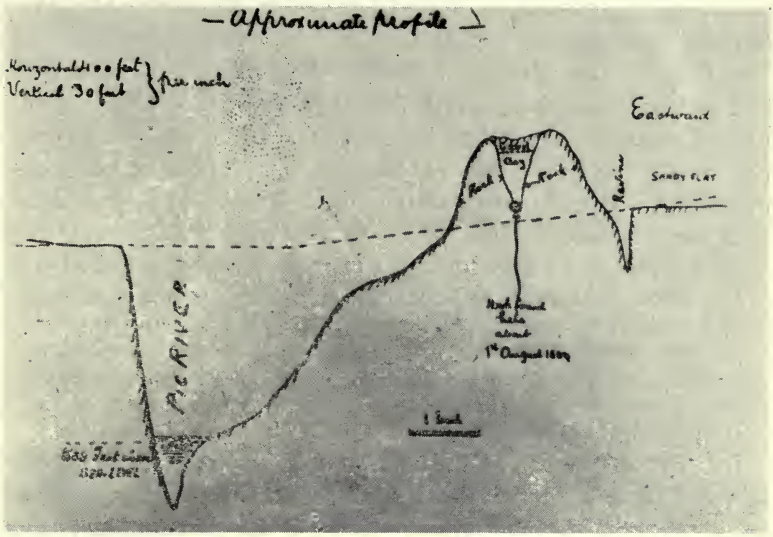


FIGURE 2

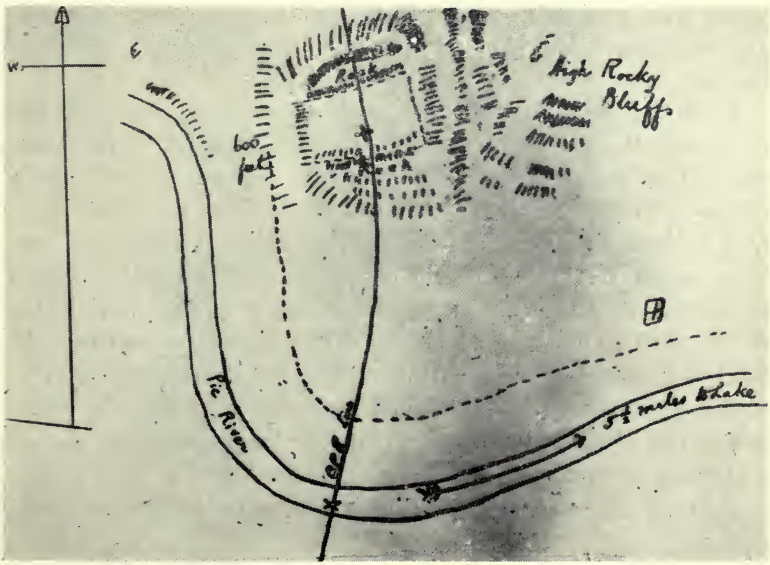


FIGURE 3

Original photographs of profile and ground plan sketches submitted by Dr. H. W. D. Armstrong to Dr. Charles Napier Bell. Donated to The Manitoba Museum by Dr. F. G. Bell.

of the editing committee. dated December 30, 1885. Mr. McLachlan felt that the "camp ground" had been covered by a "land slide." Dr. Bell then mislaid the artifact and drawings and did not find them again until 1922. At that time his renewed interest caused him to present a paper on the discovery to the Science Club of Winnipeg. His paper was entitled: "An Implement of Prehistoric Man," and concludes with these words:

> "I may state in conclusion that with the exception of a few short notices of the receipt by me of this hook, dated some 36 years ago, publication with full data and reproduction of the plans, etc. has never been given before this evening, for, as a matter of fact, the sketches became mislaid amongst my files of documents, and only recently came to light again."

Dr. Bell's interest continued, and he submitted his paper to the Peabody Museum of Harvard University for publication. Dr. Bell's article was refused by Mr. Willoughby, Director of the Anthropology Section, University Museum, in a letter dated January 2, 1923. Mr. Willoughby felt that the hook was probably a "bodkin accidentally bent into the present form," and that the paper was too "short" for publication.

At the same time Dr. Bell made further inquiries of the Canadian Pacific Railway. Mr. D. C. Coleman, Vice President of Western Lines, responded by having a field study of the rock cut conducted in mid-winter. This was done by a Mr. Nelson who reported that: "The snow is fully two feet deep on the flat and of a soft character, which made climbing somewhat difficult." The report of this trip was forwarded to Mr. Bell on January 6, 1923. While it clearly confirms the essential topographic details recorded by Armstrong, it does indicate that the west section of the outcrop, which had contained the artifact, was now completely obliterated by further widening of the cut. However, the east profile was intact, and retained, of course, the characteristics of the westerly one.

In 1925 Dr. Bell again corresponded with Mr. Armstrong who then prepared detailed blueprints of the cut and ground **(Figure 4, Figure 5).** In a letter to Dr. Bell, dated February 27, 1925, Mr. Armstrong mentions that he has just read Dr.

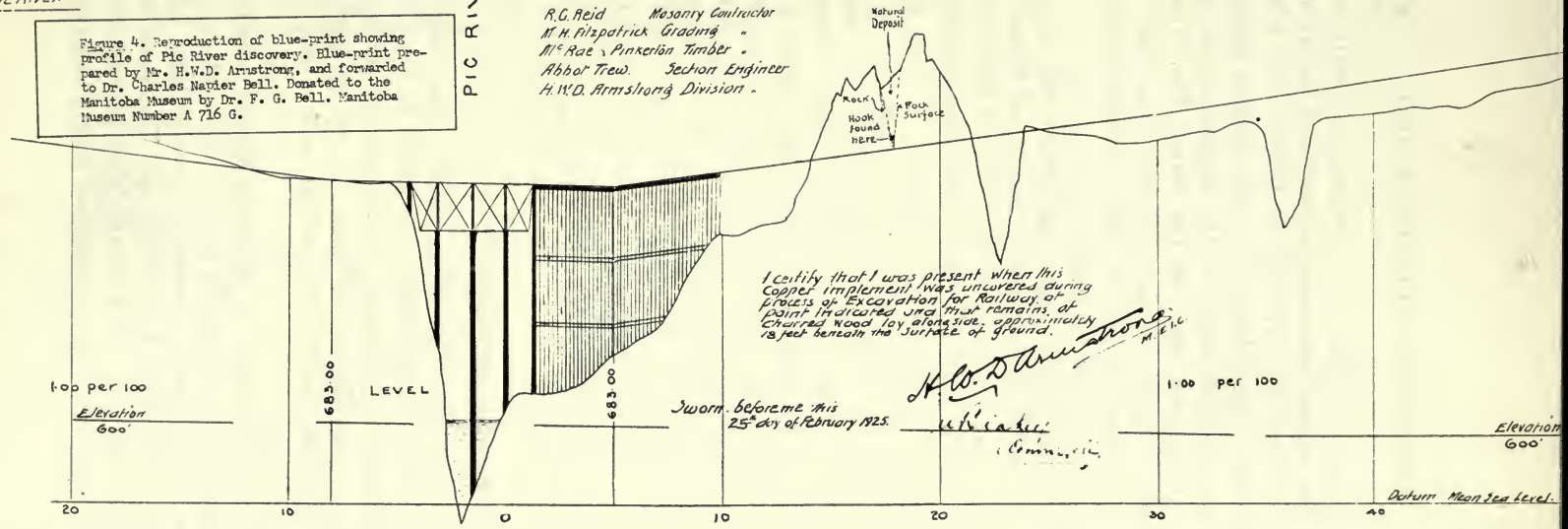
M
801

Profile of Part of CANADIAN PACIFIC RAILWAY showing Location of A Native Copper Hook found in Cutting 4th August 1884.

Note
Main Line - 801 Miles from Montreal
North of Lake Superior
About 6 Miles from mouth
of Pic River

Scale Hor. 400'. Ver. 30' = 1 inch.

Figure 4. Reproduction of blue-print showing profile of Pic River discovery. Blue-print prepared by Mr. H.W.D. Armstrong, and forwarded to Dr. Charles Napier Bell. Donated to the Manitoba Museum by Dr. F. G. Bell. Manitoba Museum Number A 716 G.



Bell's paper, and that he is caused to modify only one fact in it. His original statement of the depth of the artifact seems to have been misinterpreted as thirty feet. Mr. Armstrong explains that this referred to "the general depth of the cutting," and not the depth of the deposit which he would estimate at eighteen feet. In this letter, Mr. Armstrong, who was then 73 years of age, indicates that his: "only amusements are now, outside of letter correspondence, horseback riding, dancing, and skating."

In 1927 Dr. Bell's paper was published as a Transaction of the Historical and Scientific Society of Manitoba (Vol. 2). In 1928 it was published as the Ontario Provincial Museum's Archaeological Annex to the Thirty-Sixth Annual Report of the Minister of Education, Ontario. At this point, the Pic River Discovery again drops out of sight.

The thread is not taken up again until 1957 when Dr. James B. Griffin re-discovered Dr. Bell's report in preparation for archaeological explorations in the Lake Superior region. Both Griffin (1961:104) and Quimby (1962:77) have since commented on the find. The artifact and related documents have remained in the Manitoba Museum at Winnipeg until a recent examination of Manitoba Old Copper materials by the writer. At the present time, the artifact and representative documents have been forwarded to Dr. J. V. Wright at the National Museum of Canada, Ottawa, for more detailed, technical analyses.

The Archaeological Facts

From the foregoing, it is evident that some measure of caution need be applied to the study of this find. Without questioning the judgment of the leading participants in the recovery, who are now all dead, we are obliged simply to examine the essential details, mainly as they are viewed by recent authorities.

Clearly, the depth of the clay deposit overlying the artifact and charcoal suggests considerable antiquity. Moreover, the position of the find itself is now at least 100 feet above the present level of Lake Superior. The most likely point in geological time at which water levels would have been high enough to account for the deposit seems to have been during

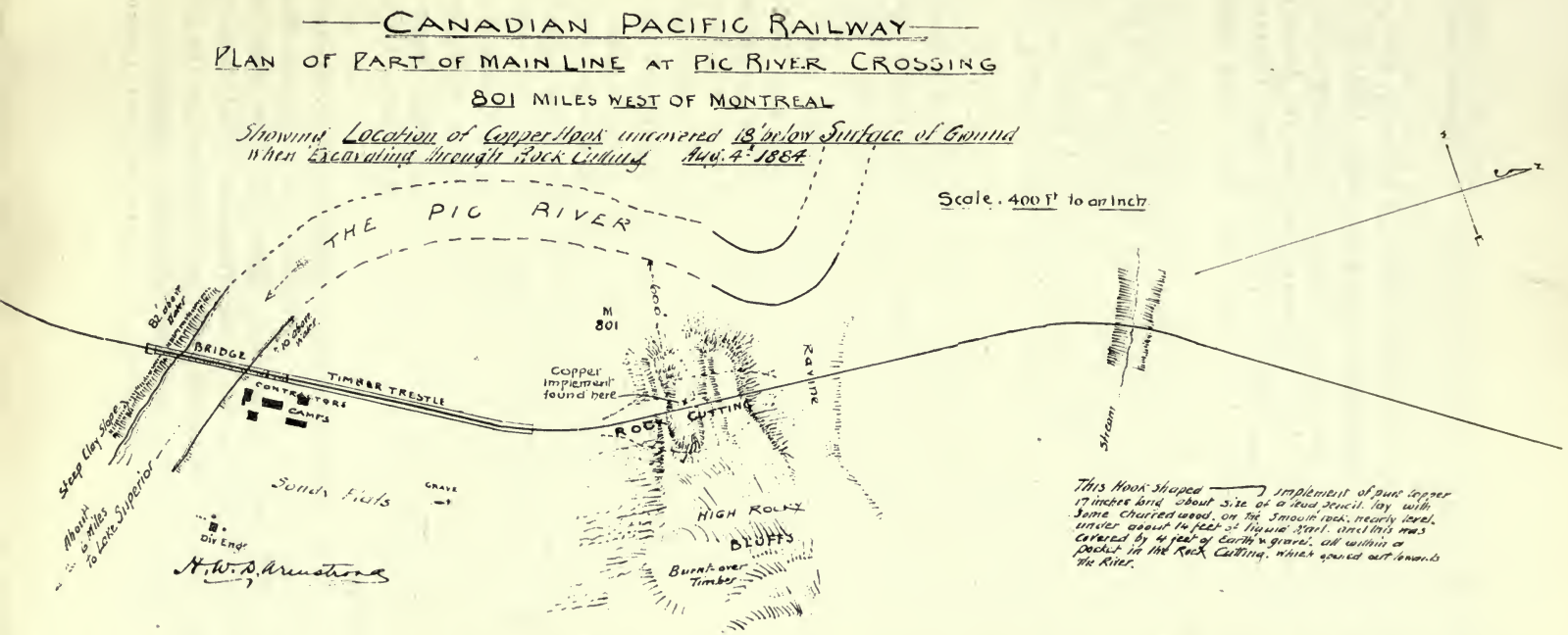


FIGURE 5. Reproduction of blue-print showing ground plan of the Pic River discovery. Blue-print prepared by Mr. H. W. D. Armstrong, and forwarded to Dr. Charles Napier Bell. Donated to the Manitoba Museum by Dr. F. G. Bell. Manitoba Museum Number A 716 G.

the Nipissing stage of the Great Lakes. The early part of this stage has been radiocarbon dated at about 3,000 B. C. (Quimby 1962:77). The exact dating of the deposit, however, is still in doubt. While Quimby feels that the locus is probably pre-Nipissing, Griffin (1961:107) and Farrand (1960:108) feel that the find would date from some point during the Nipissing rise.

Other copper artifacts have been recovered from similar and even greater depths (Quimby and Spaulding 1957:200, Griffin 1961:111, Quimby 1962:76). A widening range of radiocarbon dates for Old Copper sites in Wisconsin and Upper Michigan can be brought to support any of such contexts (Quimby 1962:77).

While Old Coppter artifacts, conforming to Wittry's original typology (1951), have been found broadly distributed to the Northwest of the Wisconsin heartland (Ritzenthaler 1960:34, Johnson 1964:5, Steinbring 1965), the copper "gaff" was not among those types. It is also possible that the northwest finds may date from a later period than the onset of the Nipissing stage. In Manitoba their location well within the limits of glacial Lake Agassiz suggests to some authorities an antiquity of possibly much less than 3,000 B. C. However, as Griffin indicates (1961:125), recent geological studies may point to an earlier draining of glacial Lake Agassiz II (Lee 1959, 1960). Elson (1962:6) suggests that "Lake Agassiz II was drained before 6,750 years ago." Despite the possibility of earlier drainage, Griffin interprets the Manitoba material as indicating a dispersal of Old Copper types into the region between 1500 and 500 B. C. (1961:125). Current studies of glacial Lake Agassiz shorelines by the Department of Anthropology, University of Manitoba may provide useful information for the clarification of such dates. (Mayer-Oakes 1965).

Speculations

Its manufacture from cold-beaten copper, and its probable antiquity suggest the assignment of this artifact to a northern spread of Old Copper technology. Since this type does not occur within the cultural heartland from which Wittry drew his sample (some 2,000 specimens), an sssignment to the Old Copper Culture could not presently be fully supported.

The currently know distribution of these artifacts, further,

seems limited to the northwest shore of Lake Superior, and two interior lake locations. This geographically restricted distribution might point to a specialized ecological adjustment in which such a tool would be especially useful. While Griffin has advanced interesting data on the faunal possibilities of Nipissing times (1961:108), much more needs to be known.

A total of eight of these hook-like objects are reported by Griffin, and probably constitutes the great preponderance of those presently known. In addition to the Pic River specimen, there are three shown from the Lakehead College Collections (one from Black Bay, and two from the north shore of Lac Seuel), two more appear in the Thunder Bay Historical Museum (probably from the Fort William area), while another is reported from Pie Island near Fort William (see Bell 1928). Still another is reported from near Geike Island in the northern part of Lake Nipigon. The Pie Island and Geike Island finds were brought up in commercial fish nets.

While measurements are not available for all of these, the Pic River specimen is 27.7 cm. in linear length (not including the four inch section broken off at the time of discovery), and the others for which measurements can be reasonably estimated exceed 35 cm. (nearly 14 inches) in linear length (a maximum outside tape measurement). The Pic River specimen is fairly uniformly 6 mm. in diameter, but the others would appear somewhat thicker. The shanks of these artifacts would appear to be about 10 or 11 inches in average length. These are large, heavy hooks, a few of which contain a small additional hook at the base of the shank which is directed toward the working end.

Since Bell's first description of such an artifact, the terms "hook" and "gaff" have been standardly applied, with the latter being most favored. The great size and general lack of precedence tend to dampen the validity of the ordinary fishhook classification. And, there are a number of quite uniform characteristics which might suggest an alternative hypothesis for the "gaff" nomenclature. I would like to suggest that these items may not be gaff hooks at all, but, instead, the broken, single components of a tri-part fish spear. . A gen-

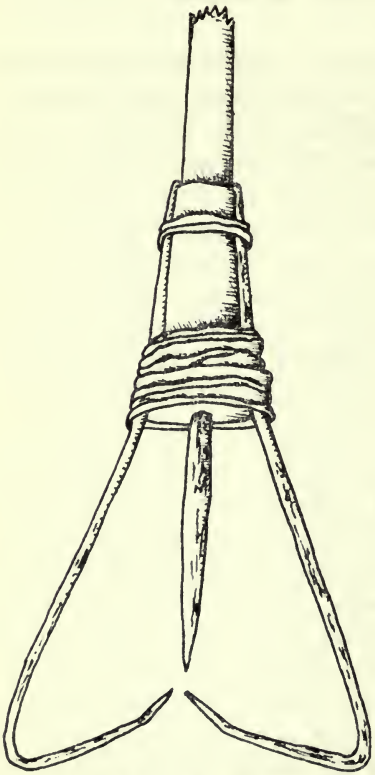


FIGURE 6. Generalized version of a tri-part fish spear, incorporating copper hook-like objects.

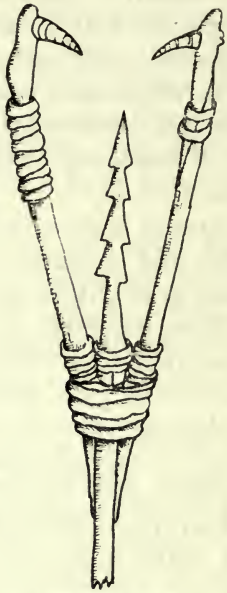


FIGURE 7
Fish spear from the Copper Eskimo of Coronation Gulf. Side barbs are of copper, central barb of antler. Drawing after Forde.

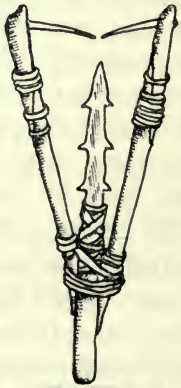


FIGURE 8
Eskimo fish spear not using copper. After Stefansson,

eralized version of this type of fish spear may be seen in Figure 6.

There are several reasons for suggesting this alternative. First of all, several of the specimens appear to be broken at some short distance forward of the base of the shank. The probability of such breakage would seem higher for a device attached to a long shaft than one held in the hand or on a short handle. Needless to say, the presence of the reversed basal hook on a short handled gaff would necessitate protection of the hand. All specimens so far recorded exhibit an inbending at the extreme point. While this coincides with our expectations of a large fish hook, shallow curves are more characteristic of gaffs. And, this is precisely the point at which a strong forward thrust against a heavy fish, such as a sturgeon (consistent with the size of this device), would cause the comparatively soft copper to yield. The force of a gaff, drawn toward the holder, would cause the copper to yield in exactly the opposite direction. One might observe also that most of the specimens so far described exhibit a longitudinally recurved form. While such is not required, or normally present, on gaffs, a curve of this type would facilitate the proper attitude of a tri-part fish spear. While it would go far from explaining their extensive numbers, the large copper "awls" commonly associated with Old Copper Culture might serve well as the central prong of such devices. Certainly such an explanation would be no more functionally farfetched than that which visualizes someone perforating hides with a foot-long "awl".

From the "tri-part fish spear hypothesis", an explanation of the occasional small hook at the basal position becomes a bit more atmospheric. Possibly this is involved in the hafting procedure, being driven into the shaft, perhaps at a point where the diameter has been reduced to produce an abutment. The concept of an abutment in hafting is clearly demonstrated in Old Copper technology (Wittry 1957:210), and I am personally aware of its continuing historic presence among the Northern Ojibwa. It may also be interesting to observe that some Ojibwa bands express a tradition of copper working, despite the fact that they have not actually known its use during living memory. There are also occasional references

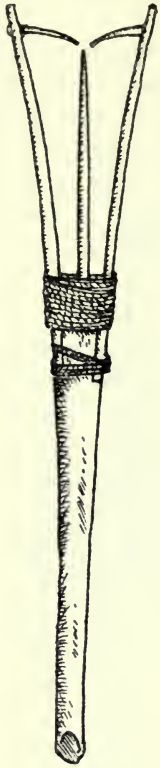


FIGURE 9
Kakivang or salmon spear of the Central Eskimo (After Boaz).

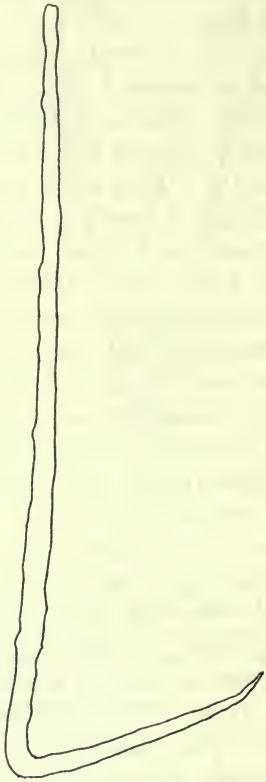


FIGURE 10
Copper hook recovered off Pie Island in Lake Superior. It was brought up in a commercial fish net by Captain Chisholm of the Dominion Fish Company during a storm. (Bell 1928:54). Length 18.7 cm.

to copper in the mythology of the Southern Ojibwa (Casagrande 1955:125).

While there are numerous representatives of the tri-part fish spear in the ethnography of hunting and collecting cultures, for our purposes the most interesting one arises among the Copper Eskimo. During the historic period, copper was used by these people in the manufacture of a tri-part fish spear (Forde 1950:125). While the overall form remains the same as our hypothetical one, only the lateral barbs are now made from copper. In connection with the presence of this device among the Eskimo, it is interesting to note that Quimby (1962:76) has advanced the theory that the Copper Eskimo received Old Copper influences through long-term northwesterly diffusion from the original Upper Great Lakes centers.

BIBLIOGRAPHY

Bell, Charles Napier
1885 Letter from R. W. McLachlan, the Canadian Antiquarian and Numismatic Journal, Montreal, December 30, 1885. Manitoba Museum Number A 718(a)G.
1922 "An Implement of Prehistoric Man," original mss., read before The Science Club of Winnipeg, December 5, 1922. Manitoba Museum Number A 717G (Published as a Transaction of the Manitoba Historical and Scientific Society, 1927).
1923a Letter from Mr. C. C. Willoughby, Director of the Anthropological Section, Peabody Museum of Harvard University, January 2, 1923, Cambridge, Mass. Manitoba Museum Number A 718(c)G.
1923b Letter from D. C. Coleman, Vice President of Western Lines, Canadian Pacific Railway Co., January 11, 1923, Montreal, Que. Manitoba Museum Number A 716G.
1925 Letter from Mr. H. W. D. Armstrong, February 27, 1925, 657 Huron St., Toronto, Ont. Manitoba Museum Number A 718(b)G.
1928 "An Implement of Prehistoric Man," with additional statement and photo of Pie Island specimen. Report of the Minister of Education, Ontario, Appendix: Archaeological Report (36th), pp. 51-54.

Boaz, Franz
1888 "The Central Eskimo," Sixth Annual Report of the Bureau of Ethnology to the Secretary of the Smithsonian Institution 1884-85, pp. 399-669.

Casagrande, Joseph B.
1955 "John Mink, Ojibwa Informant," **The Wisconsin Archeologist,** Vol. 36, No. 4, p. 125.

Elson, John A.
1962 "History of Glacial Lake Agassiz," Problems of the

Pleistocene and the Arctic, Vol. 2, No. 2, McGill University Museums, p. 6.

Farrand, William R.
1960 Former Shorelines in Western and Northern Lake Superior Basin, Doctoral Dissertation, University of Michigan, Ann Arbor, pp. 107-9.

Forde, C. Daryll
1950 Habitat, Economy and Society, 8th Edition, New York, p. 125.

Goldenweiser, Alexander
1937 Anthropology, New York, pp. 72-99.

Griffin, James B.
1961 Lake Superior Copper and the Indians: Miscellaneous Studies of Great Lakes Prehistory, Anthropological Papers, Museum of Anthropology, University of Michigan, No. 17, pp. 103-114, 124-126, Plates XXIII-XXV.

Johnson, Elden
1964 "Copper Artifacts and Glacial Lake Agassiz Beaches," **Minnesota Archaeologist,** Vol. XXVI, No. 1, pp. 5-23.

Lee, Hulbert A.
1959 Surficial Geology of Southern District of Keewatin and the Keewatin Ice Divide, Northwest Territories. Geological Survey of Canada, Bulletin 57, Ottawa.
1960 "Late Glacial and Postglacial Hudson Bay Sea Episode," **Science,** Vol. 131, No. 3413, pp. 1609-11.

Mayer-Oakes, William J.
1965 "Manitoba Prehistory—1965," Unpublished mss. submitted as a chapter to a forthcoming volume on the archaeology of Canada, honoring Diamond Jenness, Ottawa 1965.

Quimby, George I.
1960 Indian Life in the Upper Great Lakes, Chicago, pp. 43-63.
1962 "The Old Copper Culture and the Copper Eskimos, An Hypothesis," in John M. Campbell (Edit), Prehistoric Cultural Relations Between the Arctic and the Temporate Zones of North America, Arctic Institute of North America, Technical Paper No. 11, pp. 76-79.

Quimby, George I. and Albert C. Spaulding
1957 "The Old Copper Culture and the Keweenaw Waterway," **Fieldiana-Anthropology,** Chicago Natural History Museum, Vol. 36, No. 8, pp. 189-201.

Ritzenthaler, Robert
1960 "An Old Copper Crescent From Alberta," **Wisconsin Archeologist,** Vol. 41, No. 2, p. 34.

Steinbring, Jack
1965 "Old Copper Artifacts in Manitoba," Unpublished mss., Laboratory of Anthropology, United College, Winnipeg, Canada.

Wittry, Warren L.
1957 "A Preliminary Study of the Old Copper Complex," **Wisconsin Archeologist,** Vol. 38, No. 4, pp. 204-221 (Reprinted from 1951 edition).

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